Volume 9, 2
October 1996
A Subject and Author Index
of Dissertations and Theses
Including Abstracts

Health
Physical Education and Recreation

Exercise and Sport Sciences

Microform Publications Bulletin

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Bulletin 9, 2
This publication is the second issue of Bulletin 9. The bulletin represents microfiche published in October 1996. Previously, bulletins were published every 5 years, except for Bulletin 7, which covers two and a half years. Beginning with Bulletin 8, there will be two issues (nos 1 and 2) per annual bulletin. Each issue includes a section of thesis and dissertation titles and abstracts, as well as a section of keywords. Bulletin 10, 1 will appear in April 1997.

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**PART I: TITLES AND ABSTRACTS**

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**PHYSICAL EDUCATION**

**ADMINISTRATION**

Fiscus, Douglas L. *Comparison of the Mid-American Conference athletic department regarding compliance with Title IX, 1996*. M.A., Ball State University (Jerry L. Rushton). (66pp 1f $4.00) PE 3639

Introduction: Gender discrimination has been an issue in society since the beginning of time. Title IX is one of the most publicized topics involving college athletics during the 1990’s. Women are bringing lawsuits against colleges and universities after learning they have the legal right to the same opportunities as men. Title IX is making things equitable, not necessary equal in dollar amount. The athletic departments have to achieve “proportionality.” Proportionality is reached when the ratio of male and female student-athletes equals the proportion of male and female enrollment in the undergraduate student body. The Office of Civil Rights examines three areas in assessing an athletic department’s compliance with Title IX: (1) athletic financial assistance; (2) other nonfinancial program areas; and, (3) the accommodation of athletic interests and abilities of students (Lopiano, 1994; Narol, 1994; Pieronek, 1994; Wilde, 1994). Purpose: To compare the athletic departments in the Mid I American Conference institutions regarding compliance with Title IX. Significance: The data elicited from this study will provide useful information to athletic compliance directors. Method: A questionnaire was sent to the ten athletic compliance directors in the M.A.C. The instrument was composed primarily of YES / NO choices describing the different issues regarding compliance with Title IX guidelines. A cover letter that explained the purpose and benefits of the study accompanied the survey. Statistical analysis and computations were made in order to analyze the responses to the questions in the survey. Chi square analysis was used to examine the data obtained in the study. Results: Chi-square statistical analysis were performed during this study to determine the financial differences between several survey questions. Variables were combined for analysis because of a small sample size. The Alpha level was P<.05 in all analysis. The null hypothesis of the Title IX survey stated that there will be no statistical differences in the survey questions.

Fontaine, Pamela J. *Wheelchair basketball: an analysis of the factors leading to team success, 1994*. M.S., Texas Woman’s University (Ron French). (74pp 1f $4.00) PE 3641

The purpose of this study was to investigate the factors which lead to team success in wheelchair basketball. Subjects were coaches of the teams that finished in the top 20 and the bottom 20 of the NWBA during the 1992 season. At the end of the season the subjects received a questionnaire containing the factors identified in the literature which seem to be significant in determining team success. The factors examined were: (a) leadership and team compatibility, (b) finances, (c) hours of practice per week, (d) number of years the team has been in existence, and (e) recruitment. Based on the results of the study, team leadership and compatibility was not important in determining team success. However, finance, practice, years of existence, and recruitment factors were important in determining team success in wheelchair basketball.

Giles, Scott L. *An investigation of the career mobility patterns of NCAA Division I-A head football coaches, 1995*. M.S., Brigham Young University (Barbara Day Lockhart). (82pp 1f $4.00) PE 3646

This research focused on the career mobility patterns of the current 107 NCAA Division I-A head football coaches. Career profile sheets were requested from the sports information department at each university. Career profile sheets were reviewed and data on 18 different aspects were examined. These 18 aspects included information pertaining to playing experience, coaching experience, career mobility, and demographics. The results revealed the following: nearly all of the coaches played college football (97.20%); of those who played, 68 played at the Division I-A level; the majority did not play post-college football; 92.52% were assistant coaches on the Division I-A level; roughly half coached on the high school level; the average number of job changes prior to the first Division I-A head job was 4.76 (s=2.29); and the average age at the time they received their first Division I head job was 40.5 years (s=5.58).

The purpose of this study was five-fold: (a) to determine the overall level of marketing effectiveness in NCAA Division I Men’s Basketball Programs, (b) to determine what percentage of time was spent on each promotional strategy, (c) to determine which promotional strategies were perceived to be most effective, (d) to determine if there was a relationship between the level of marketing effectiveness and the percentage of time spent on each promotional strategy, and (e) to determine if there was a relationship between the level of marketing effectiveness and the perceived effectiveness level of promotional strategies at those institutions. The results of this study indicated that a majority of responding institutions fell into the good category on the marketing effectiveness scale. While the highest percentage of time was spent on advertising, public relations was perceived to be the most effective strategy among sports marketing directors. There was a significant correlation between the level of marketing effectiveness and the percentage of time spent on sales promotion, personal selling, public relations, and other strategies. Finally, there was a significant correlation between the level of marketing effectiveness and the perceived level of effectiveness of all promotional strategies.

Holmoe, Thomas A. *The selection and use of team captains in college football*, 1995. M.S., Brigham Young University (Boyd O. Jarman). (80pp 1f $4.00) PE 3653

This study was conducted to identify frequently reported methods, strategies, and reasons determining the selection and use of team captains by Division I-A college football coaches. Expert coaches and athletes were surveyed to determine what they perceived as important considerations in selecting team captains. The experts answered questions on the selection of team captains and effective practices from their experiences as players and coaches. Their responses were summarized and grouped into specific categories, the most frequent responses being used to construct a questionnaire that was sent to the 106 Division I-A college football coaches. The football coaches’ responses were then used to determine frequency of methods and variety of strategies employed in the selection and use of team captains. Results from an 89% return rate showed that although traditional methods such as having team members elect captains who serve the entire year are still preferred by coaches, there are other methods employed that need to be examined.


As the cost of operating an athletic training room escalate, athletic trainer’s find themselves in search of new sources of budget support. The purpose of this investigation was to determine the utilization of financial and product sponsors within college athletic training programs. A questionnaire was developed and sent to the head athletic trainers at 57 NCAA Division IA and Division IAA institutions, based on their football divisional status and geographical location (Midwest, Northeast and Southeast). Of the 57 questionnaires, 51 were returned (89.9%). Descriptive statistics and cross tabulations were computed. The results showed that the majority (70.6%) of the institutions surveyed utilized some type of sponsorship, public or private. However, the results showed both Division levels generally utilized only one sponsorship (58.8%). Eighty percent (80.0%) of the Division IA athletic training programs acquired sponsorships in two ways: by the active pursuit of the athletic training program or by the active pursuit of the sponsor company. However, 50% of the Division IAA sponsorships were initiated by the pursuit of the athletic training program only. Therefore, the athletic training programs that utilize sponsorships may appreciate only a slight alleviation in their overall budget.

Sweany, Lisa. *Comparison of factors affecting the career paths of male and female directors of intercollegiate athletics*, 1996. M.A., Ball State University (John Reno). (67pp 1f $4.00) PE 3674

The position of director of intercollegiate athletics represents the highest administrative position in athletics in colleges and universities. During the days of the Association for Intercollegiate Athletics for Women (AIAW), 90% of the women’s programs were coached and administered by women. Shortly after the implementation of Title IX in 1972, this trend began to change and most women’s programs began to fall under the leadership of male coaches and administrators. During the summer of 1982, the National Collegiate Athletic Association (NCAA) took control of the AIAW forcing women administrators to take a backseat to their male colleagues. This lack of administrative and coaching representation has also resulted in fewer role models for female athletes. This study was designed to compare the qualifications of men and women directors of intercollegiate athletics to determine if the women must be more qualified than their male counterparts to hold the same position. This study may also serve as a blueprint for women in athletics as to the qualifications and experiences necessary in their attaining a position of director of intercollegiate athletics. The results of a survey questionnaire to 200 male directors of NCAA Division I, II, III, and NAIA colleges, with a return rate of 52.3%, were compared to an early study conducted on female directors to deter-
mine if the qualifications between the two genders were different. The educational results were very similar between the two genders, with both maintaining that a master’s degree was extremely important in attaining their positions. Both genders also confirmed that at least one year of experience in athletic administration was crucial to their appointment as director of athletics. In examining the qualifications of both men and women who hold athletic administrative positions, it was not conclusive that educationally or professionally, the women were more qualified than their male colleagues. The responses to the survey by both men and women were very similar in their beliefs of what was important in attaining their current positions.

MEASUREMENT AND EVALUATION

Murphy, Aron J. Testing strength and power: an investigation of the reliability, validity and appropriate uses of isometric, isokinetic and isoinertial tests of muscular function, 1996. Ph.D., Southern Cross University (Greg Wilson). (364pp 4f $16.00) PE 3664

The series of studies conducted in this doctoral project represented a major investigation into the application of isometric, isokinetic and isoinertial tests of muscular function. In essence, this research was conducted to examine the reliability, validity and the usefulness of a number of new and established tests of muscular function. In so doing, the mechanical and neural responses of the human system in the varying testing modalities were determined to establish which test(s) most accurately reflected the underlying mechanisms in operation during dynamic muscle performance. Further, the question of whether a general strength component exists was pursued in studies 1 and 2. In each study, the reliability of the various parameters was determined using intra-class correlations and the co-efficient of variation. The validity of the tests was evaluated by the magnitude of the relationship between the tests and dynamic performance, and the ability of the tests to discriminate between individuals of varying performance levels. In study 1, 13 trained subjects performed a series of isometric (at two joint angles) and isoinertial maximal upper body tests in a bench press movement. . . . Study 2 compared the relationship of isokinetic and isoinertial tests of muscular function to dynamic upper body performance. . . . The purpose of study 3 was primarily to examine the ability of isokinetic and isoinertial tests of muscular function to track training induced changes in performance.

Potvin, Patrick J. Statistical power for repeated measures ANOVA, 1996. M.S., University of British Columbia (A. Martin). (176pp 2f $8.00) PE 3666

Determining power *a priori* for univariate repeated measures (RM) ANOVA designs is a difficult and often excluded practice in the planning of experimental research. Complicated procedures and lack of accessibility to computer power programs are among some of the problems which have discouraged researchers from performing power analysis on these designs. Another more serious issue has been the lack of methods available for estimating power of designs with two or more RM factors. Due to uncertainties on how to compute an appropriate error term when more than one variance covariance matrix exists, analytical methods for approximating power are currently restricted to RM designs with only one within subjects variable. The purpose of this study therefore, was to facilitate the process of power determination by providing a series of power tables for ANOVA designs with one and two within-subject variables. A secondary objective was to investigate less well known power trends among ANOVA designs having heterogeneous (nonspherical) correlation matrices or two RM factors. Power was generated using analytical and Monte Carlo simulation methods for varying experimental conditions of sample size (5, 10, 15, 20, 25 & 30), effect size (small, medium & large), alpha (.01, .05 & .10), correlation (.4 & .8), variance-covariance matrix patterns (constant, *ε*=1.00 and trend, *ε*<.56) and levels of RM (3, 6 & 9). Examination of power results revealed that under conditions of nonsphericity (trend matrix pattern), power was found to be greater at small effect sizes and lower at medium and large effect sizes compared to those values generated under conditions involving spherical (constant matrix) structures. Regarding designs with two RM factors, power of main effects tests was observed to be greatest for a given condition so long as the average correlation among trials of the pooled factor was equal to or below that of the main effects factor. For interaction tests of the same model, power was found to be greatest for a given condition when at least one factor had an average correlation across its trials equal to .80. From simulation results, the relationship between error variance and power across different correlation matrices of the two-way RM design was examined and approximations of the noncentrality parameter for each test of this model were derived.

PEDAGOGY


This qualitative study described and analyzed the staff development practices of three physical education resource teachers. Resource teachers’ rationales for staff development decisions were sought to attain information as to why they operated in a certain fashion. Resource teachers’
reflections of staff development practices were solicited to inquire about the kinds of obstacles and/or enabling factors they encounter in their work, and about the strategies they employ to overcome/utilize them. The study was designed to permit close observation of the resource teachers and their staff development practices for a period of one school year. To realize the study’s intentions and to insure triangulation of evidence, several types of data collection and recording methods - including observations in situ, fieldnotes, taped and transcribed formal and informal interviews - were employed. The results of the examination indicated that, to promote proteges’ professional development, resource teachers provided hands-on assistance and integrated proteges into the school system’ professional network of teachers. Resource teachers employed and adjusted their practices according to their growing understanding of the needs of individual proteges. They continuously reflected on standards of “good teaching”, on the [in]competencies of individual proteges, and on proteges’ unique teaching environments. Resource teachers motivated, opened communication channels, provided proteges with instructional materials, with feedback about their teaching, and with assistance in the planning and instruction of their classes. Proteges were also prompted to reflect about their own instructional behaviors. The study’s subjects were able to work successfully because they possessed practical experience and expertise as well as excellent “people skills”. Staff development processes were impeded when the resource teachers’ perception of “good teaching” was not shared by individual proteges. Lack-of-time problems arose because of the resource teachers’ dual occupation as physical educators and staff developers. The study results indicate that staff development is a complex process that is based on participants’ willingness to enter and maintain collaborative professional relationships, and on the compatibility of participants’ philosophies of teaching. Furthermore, staff development processes are perpetual and require staff developers to continuously reflect on and adjust their practices.

Jefferis, Shelly J. Aerobic certification, 1995. M.A., California State University, Northridge (Don Bethe). (97pp 1f $4.00) PE 3655

The purpose of this study was to examine current aerobic certification programs and the process of becoming a certified aerobic instructor. Five separate surveys were designed for five groups of subjects. The subjects included professional aerobic certification organizations (n=3); health club aerobic directors (n=13); aerobic instructors (n=40); collegiate certification course instructors (n=4); and university professors (n=26). Each group of subjects provided a perspective to existing certification programs and offered suggestions for the improvement of aerobic certification programs and aerobic instruction. The results of the study identified a few areas of agreement and several areas of disagreement as to certification requirements. Many inconsistencies exist among aerobic certification organizations and programs, including a lack of agreement among national certification organizations and among collegiate certification programs as to the appropriate curriculum for the certification of aerobic instructors. There was agreement among the groups surveyed, that aerobic instructors should have knowledge in human anatomy, exercise physiology, nutrition, safety awareness, injury prevention and exercise prescription. Although agreement was present in these areas of knowledge, each aerobic certification curriculum did not reflect this agreement. There was also a lack of agreement among the collegiate course instructors, the aerobic directors, the aerobic instructors, and university professors as to the suggestions of what needs to be done in current and future aerobic certification programs. Aerobic directors, aerobic instructors, and collegiate course instructors believed that a higher level of practical training is necessary prior to teaching aerobics. The university professors indicated that aerobic certification organizations need to offer more knowledge to potential aerobic instructors. It is evident that many diverse attitudes and opinions exist toward aerobic instructor certification. The results from this study suggest that changes need to occur in order to raise the standards and qualities of aerobic instructor certification.

LaMaster, Kathryn J. Preservice teachers as mentors during an early field experience through electronic communication (e-mail), 1996. Ph.D., Ohio State University (Deborah Tannehill). (167pp 2f $8.00) PE 3660

This study was designed to examine telecommunications among preservice teachers during an early field experience. The purpose of this study was to determine if field experience students’ could provide one another with support, guidance, and “how to” relative to teaching their lessons, and to gain the students’ perspective on the use of electronic communication in the field experience process. Subjects were 8 juniors in the methods year of the Physical Education Teacher Education program at The Ohio State University. Participation in e-mail tasks such as posting critical incidents, responding to peers’ incidents, weekly journals, and surveys were the data sources for this study. Upon completion of the study these preservice teachers were able to reflect upon their teaching, post a critical incident to peers, and respond to peers’ critical incidents. Subjects stated that the feedback they received was supportive and positive concerning the situations. While suggestions were being provided, few if any changes were made to lessons or teaching due to these suggestions. They also experienced a slight positive shift in attitudes toward computer technologies during this e-mail study.
The purpose of this study was to investigate the effect of trained hearing peer tutors on the physical activity levels of deaf students in integrated elementary physical education classes. This study utilized a single subject multiple baseline design across subjects. Eight deaf 4th and 5th grade students and eight hearing 4th and 5th grade peer tutors participated in the study. The students were observed during their physical education class and data were analyzed on physical activity levels and peer tutor behavior. The deaf students and peer tutors were first observed during a baseline period of 4-6 classes with no intervention. The peer tutors were trained toward the latter part of the baseline period. The peer tutor intervention lasted from 11-13 classes. During the intervention, the peer tutor and deaf student participated in pairs for the fitness portion of the class. The results of the intervention demonstrated that the implementation of trained hearing peer tutors improved the physical activity levels of both the deaf students and peer tutors. The training of the peer tutors consisted of signs pertaining to: instruction, physical fitness, and teaching techniques in the areas of: cueing, feedback and reinforcement. The cueing approach followed the system of least prompts and included verbal cueing, modeling, and physical assistance. Feedback consisted of positive general and positive specific reinforcement. Peer tutors were trained over four to five 30 minutes sessions. Pre-established criteria required the peer tutors to implement the teaching behaviors with the researcher a minimum of 4 out of 5 times, and receive a score of 90% or better on the peer tutor quiz. All peers were successful at meeting this criteria. Data were collected on the peer tutors tutoring behavior throughout the study by systematic observation. The results of the peer tutor data revealed that the tutors were able to implement the tutor training program. The results of this study demonstrate that elementary aged deaf students and their hearing peers can improve their physical activity levels upon intervention of trained hearing peer tutors. It was also shown that elementary aged peer tutors can be trained to provide assistance to deaf students in integrated physical education classes. Recommendations for future research are provided based on the results of the study.

While other forms of artistic leadership exist, dance companies traditionally adhere to an autocratic leadership style with one artistic director who has vision and talent enough to drive a group of dancers, not through artistic democracy but through a form of artistic dictatorship. This study examines a modern dance company designed around the concept of collective artistic direction and shared leadership. In this example, the lack of a cohesive vision, distrust among participants, and insufficient attention to how the internal structure of a collective artistic leadership style should function combined to create an adverse group dynamic that eventually rendered the collective ineffective.

Filips, Teri L. Meaning and survival: dance in the concentration camps, 1994. M.F.A., Texas Woman’s University (Adrienne D. Fisk). (32pp 1f $4.00) PE 3638

During the time of World War II, a culture developed in Nazi run concentration camps where the primary focus of its members was survival and existence. Dance and dance-like movements were utilized to reflect the cultural climate. The camps were fraught with death, so people’s wants and needs were basic. Most actions in the camp were determined by one purpose, to maintain one’s life. The instances of dance and dance-like movement recounted by survivors reflect this purpose. This paper looks at how and what culture was created in the concentration camps, how movement is an indicator of culture, and demonstrates three main ways dance and dance-like movements were used through specific examples of pragmatic movement, dances of protest, and distorted dance performances.

Fisher-Stitt, Norma S. Effect of an interactive multimedia computer tutorial on students’ understanding of ballet allegro terminology, 1996. Ed.D., Temple University (Sarah Hilsendager). (169pp 2f $8.00) PE 3640

This experimental study involved the development and testing of an interactive multimedia computer tutorial on ballet allegro terminology. The purpose of the study was to test the effectiveness of this type of computer assisted instruction in the dance studio environment. The study examined the tutorial’s effect on undergraduate dance students’ written and performed understanding of French terminology employed in the allegro segment of elementary level ballet classes. In the study, the 40 members of a first-year dance major technique class were randomly assigned to two equal groups: one experimental and one control. After all members of the experimental group navigated the computer tutorial, tests were administered to evaluate written and performed understanding of the four steps and six descriptive terms featured in the tutorial. Two independent-samples t tests then were run to compare the mean written and practical scores for each group on their understanding of steps, their understanding of steps, and their understanding of
The focus of this study was to compare theatricalized “staged” folk dance and original forms of “village” folk dance within the Hungarian culture. The following three Hungarian dance forms were selected: the Mars or Menettancok, the Csárdás, and the Karikázó. A comparison of the original and theatrical dance settings was accomplished by using a movement analysis system called Choreometrics. Results of the analysis were compared in terms of the cultural and traditional movement patterns. Context differences between village and stage settings were identified by the use of Richard Schechner’s seven step performance sequence. The data results from the Choreometrics movement analysis strongly supported Schechner’s theories, that the original function and form of any dance style takes on different perspectives in a setting governed by a codified aesthetic framework.


This dissertation is an historical survey of the first six years of the National Endowment for the Arts Dance Program. Under the aegis of the Endowment and its Dance Program, American concert dance received an infusion of support that was significant and timely, providing much needed material intervention to an art form entering a creative and prolific period. The Endowment also emerged during a unique era in American history. Its formation was one of many policy initiatives in a time remembered for significant social, political, and cultural change. This research places the Dance Program within this broader climate of ideas of the time. Specifically, this work uses the Civil Rights Movement, Vietnam War and Anti-War Movement, Youth Movement, and Women’s Movement as guideposts in viewing the context in which the Dance Program functioned. This work employees qualitative as well as quantitative data in analyzing the development and influence of the Dance Program. Included are Dance Program grant listings from fiscal year 1966 to fiscal year 1972. This research focused on primary and secondary sources including materials from the American Council for the Arts, the Nancy Hanks Archive at Duke University, the Lyndon Baines Johnson Library, the National Archives II,
the National Endowment for the Arts and the National Council on the Arts, and the New York Public Library Performing Arts Research Center. This was supplemented with interviews with key figures in the Endowment and Dance Program from this period including Don S. Anderson, June Batten Arey, Cora Cahan, Doris Hering, Ruth Mayleas, Stella Moore, Charles Reinhart, Ana Steele, Michael Straight, and Edward Villella. This work investigates the role of rhetorical, symbolic, and programmatic support. Further, it links changes in the Endowment’s focus and functioning with changes in its administration as well as with shifts in the broader culture. Additionally, it explores the concept of parity and dominance in the issues impacting arts policy as well as alternative ways of viewing these issues. From these arise many of the concerns confronting arts policy in 1995.

Holman, Sharon S. A syllabus of the American social dance silver level technique, 1994. M.A., Brigham Young University (Phyllis C. Jacobson). (148pp 2f $8.00) PE 3652

The purpose of this thesis was to create a syllabus on how to dance each of the school figures taught at the silver level of American social dance. This will assist students at Brigham Young University in their understanding of how to dance each school figure step by step. This information will help improve the student’s comprehension of foot placements, alignments, amount of turn, rhythm, and footwork for the Cha Cha, Waltz, Triple Swing, West Coast Swing, Foxtrot, and Viennese Waltz. This technical syllabus will also assist students in their preparation for class exams as well as medals exams which adjudicate the same components.

Kim, Kyunghee. The status of dance in Korean higher education, 1993. Ph.D., Texan Woman’s University (Penelope Hanstein). (207pp 2f $12.00) PE 3659

The purpose of the study was to examine the role and scope of dance in Korean higher education and to develop initiatives for curriculum change that would be compatible with the current educational system. The methodology for the study consisted of analyzing relevant dance program literature, administering surveys, and conducting interviews. The number of dance programs has risen to 24 within the existing colleges and universities in Korea, and the current curricula profiled suggest a wider range of dance studies, however, the primary emphasis has been placed on technique and performance. Through the historical review of the development of dance in Korea and the examinations of the five dance departments profiled, the following conditions affecting curriculum imbalance in dance programs were revealed: 1) Many dance artists looked to the university to showcase their artistic achievements and focused their work on developing students as dance performers. Later, graduates with only performance credentials tended to be hired as university dance faculty. 2) Since the program evaluation criteria depend on the quality of dance productions and student success in dance competitions, studio work was emphasized, and little or only minimal attention was paid to theoretical studies in dance. 3) Faculty place priority on their personal reputations as artists, as evident in a large number of private faculty dance companies and alumni dance companies. 4) Production work, not research, is the primary criteria used for dance faculty evaluation. As identified in the student surveys and faculty interviews, there are major discrepancies and contradictions between the curriculum content and faculty emphases. The students’ experiences are limited because of these faculty emphases. Although the curriculum content is designed to introduce them to all aspects of dance, in actuality, faculty only stress technique and performance. This study suggests that in order to undertake curriculum reform, the faculty should broaden their scope of the dance discipline through collaboration with colleagues and faculty development. There is great potential for reshaping the nature of dance as a field of study in Korean higher education. This is because the number of students enrolled in the dance programs shows a wide interest in dance as a discipline. Also, the interviews with the faculty suggest enthusiasm for dance and a recognition that change needs to occur.

Manning, Keitha, D. Dance history and computer courseware: the design, development, and production of interdisciplinary multimedia courseware for introductory-level instruction in late Renaissance European court dance, 1996. Ed.D., Temple University (John Finch). (251pp 3f $12.00) PE 3663

A computer courseware titled Dance History and Computer Courseware: The Design, Development, and Production of Interdisciplinary Multimedia Courseware for introductory-level Instruction in late Renaissance European Court Dance was developed by the author under the mentorship of Dr. John Finch during a period of two-and-a-half years involving six versions. The process objective was to enhance learning potential through effective interrelationships among instructional design, content selection and treatment, and applied technology within a multiple intelligence perspective. A descriptive chronicle of the creative process of design, development, and production of the interdisciplinary multimedia courseware was kept and is reported in detail in the dissertation. It was the intention of the author to demystify the authoring of courseware and to assist in encouraging other professionals to become involved in courseware development while taking into account ideas and issues relevant to learning and methodology, including principles of social inclusion. Engagement with emerging technologies on the part of dance educators was seen as critical to the development of dance pedagogy with current students and in relation to new expectations for independent and multimedia
learning. The courseware developed in this study was assumed to be most useful in conjunction with kinesthetic experience in the performance of contextualized and displayed historical dance material which was fully researched prior to decisions about its representation. The integrated capacities of dance teacher, artist, and scholar are all relevant in authoring courseware and using it effectively in the educational environment. The rapidly changing state of technology and issues related to copyright suggests a need for dance professionals to engage with a variety of colleagues and to seek out collaborative arrangements as they take responsibility for choreographing learning experiences in a computer courseware format.

Smith, Clyde. *Mandala and the men’s movement(s) in the light of feminism*, 1995. M.A., University of North Carolina of Greensboro (Susan Stinson). (96pp 1f $4.00) PE 3670

The author’s study considers “Mandala,” an evening of men’s dance/performance, and its relationship to contemporary men’s movements in light of feminist critical theories. “Mandala” was created by the male members of the San Francisco-based dance/performance group Contraband in 1989—Jules Beckman, Jess Curtis and Keith Hennessy—with much input by the female director of Contraband, Sara Shelton Mann. The author focuses on the final version performed in 1990 at San Francisco’s Theater Artaud, which he witnessed. The author begins with a consideration of his experience of San Francisco as a “life laboratory” in the realms of gender and sexuality. He then provides a detailed description of this work in multiple sections, including journal-style entries of the author’s responses and relevant quotes from the participants. The study concludes with an analysis of the gender-focused aspects of “Mandala,” including the makers’ experiences struggling with gender issues and their connection to men’s movements, particularly the Robert Bly-inspired mythopoetic men’s movement, pro-feminist men’s groups and gay spirituality movements. The contribution of the women’s movement and feminist performance art are considered as well as feminist critiques of such men’s movements. The author concludes that these men participated in multiple men’s movements which were poorly represented by the mass media in much the same way as the media misrepresented the women’s movement. Furthermore, “Mandala’s” focus on men’s issues was inspired, in part, by earlier feminist activity. Drawing on the work of Kate Bornstein, the author calls for a movement beyond restrictive binary notions of gender and towards a more flexible approach to gender possibilities.

Staley, Kimberly T. *Educating through dance: a multicultural theoretical framework*, 1993. Ph.D., Texas Woman’s University (Janice D. LaPointe-Crump). (203pp 3f $12.00) PE 3672

This study explores the teaching of dance as art in secondary education in relation to a contemporary issue, that of acknowledging diversity in American society. Studying dance is an intuitive, yet concrete, way of learning and developing understanding about history, culture, other people, and the self. The purpose of this study was to explore viable ways to broaden traditional dance curricula by designing multicultural and cross cultural movement experiences and personal research while enhancing an appreciation of the aesthetic properties inherent in dance. This discourse is supported by an analysis of selected literature on the historical cycles of reform that have occurred in secondary education. In addition, selected theories about multicultural art education and aesthetic principles inherent in dance and visual art are considered. Developed and discussed is a theoretical model framework for a comprehensive multicultural dance curriculum, which leads to increased aesthetic awareness and appreciation of diverse dance works. The framework essentially aids a learning process in which various systematic individual and collaborative artistic explorations in world dance and American theater dance, suitable for secondary level students, are decoded as a means of enhancing self-enlightenment. Set forth is a series of structured instructional environments that teaches cultural awareness through projects based on a holistic use of the senses, intellect, and multiple creative processes. In order to demonstrate how these learning models can be used to guide secondary dance explorations and substantiate the approach, three dances were observed and critically analyzed. Using the framework to guide this process, a discussion of the cultural insights and aesthetic knowledge gained from these reflexive experiences revealed how each dance contains diverse layers of symbolism and imagery, form and content, and aesthetic and kinesthetic properties. The study concludes with sample forms of the framework and recommendations for further research into the cross-cultural and multicultural aspects of dance to enhance the traditional high school dance curriculum.

Williams, Holly. *Looking at and evaluating dance: the adjudication process*, 1994. M.F.A., Texas Woman’s University (Penelope Hanstein). (52pp 1f $4.00) PE 3678

Dance is, by nature, an art form meant to be looked at and experienced. Part of the educational process for any student of dance, whether as performer or choreographer, is to have one’s work looked at by others. Often, this results in commentary by observers, directed to the student, for the purpose of constructive feedback and, occasionally, selection for inclusion - or not - in a dance performance. This process, known as the adjudication process, brings to bear many questions about criticism and art in general, and about education and dance specifically. This study examines the process of looking at and adjudicating dance, and brings forward ideas about the way in
which one observes a work and how that influences what is verbalized about the work. The study concludes that adjudication is a necessary and beneficial process to any growing artist, given the right context and a clear understanding of its purpose.

Williams, Valarie L. The use of Labanotation score analysis in the development of the expressive performer, 1994. M.F.A., Texas Woman’s University (Penelope Hanstein). (33pp 1f $4.00) PE 3680

Through the process of score analysis, students become aware of the expressive dimensions inherent in movement, making possible qualitative choices that will result in greater expressiveness in performance. Through analyzing the symbols within the context of the score, the student is presented with a variety of qualitative choices making possible more than one way of performing the same movement. The paper looks at what score analysis is, how it can be used in enhancing expressive performance, and how it works. It concludes with an analysis of the nine count phrase from Doris Humphrey’s The Shakers and suggestions for implementing score analysis components in a dance curriculum.

BIOMECHANICS

Boschma, Anne L.C. Breast support for the active women: relationship to 3D kinematics of running, 1995. M.S., Oregon State University (Gerald A. Smith). (116pp 2f $8.00) PE 3632

Breast discomfort during physical activity is a common phenomenon of many large breasted active women. Limited research exists concerning the efficacy of sports bras to provide support for these women. The purpose of this study was to determine the effects of breast support on several kinematic measures of running and on general comfort sensation (GCS) of the breasts while running in a group of 15 female recreational runners aged 18-58 years. Kinematics measured were stride length (SL), stride rate (SR), vertical trunk displacement (VTD), front arm angle range of motion (FA ROM), arm angle range of motion (A ROM), and vertical breast displacement. The runners were grouped according to breast cup size (B, C, & D). Three experimental conditions of breast support were used: 1) non-support (NS), 2) moderate support (MS), and full support (FS). The MS and FS conditions were created by using 2 different sport bras, engineered to give either moderate or full support. All subjects completed 3 treadmill running bouts at each level of support. Three-dimensional video analysis tracked each subject’s breast and trunk motion for 10 running cycles. Under the MS and FS conditions, video data were collected at the end of 5 minutes of running, while during the NS condition only one minute of running was endurable for several subjects. The order of conditions was counter-balanced to control for possible training effects. General comfort sensation was measured during each running bout, and after 5 minutes of rest. Analysis of variance was used to compare variation among groups for all cup size group mean differences between the FS and MS conditions. Post hoc testing utilized Fisher’s PLSD to identify specific group differences. Mean differences between the FS and MS conditions within each cup size group were compared using multiple t-tests. Mean SL, SR, VTD and FA ROM were not significantly different across groups or support conditions. VBM was significantly different across support levels for heelstrikes of the foot on the same side as the breast (RVBD), p=.0009, and for heelstrikes of the contralateral foot (LVBD), p<.0001. A ROM was significant across breast size groups (p=.01) between the C cup group and all other groups. The absence of differences between the B and D cup size groups suggests that this measure may not have any practical significance. GCS was significantly different across support conditions for all cup size groups (p<.03, p<.0003 and p<.0002). Despite large differences in breast motion between the full and minimal breast support conditions, the kinematic variables SL, SR, VTD, and AT ROM did not substantially change. However, this analysis compared mean values for each cup size group and some individual subjects changed kinematics substantially despite the group mean differences. The largest individual changes are illustrated in VTD data where VTD substantially decreased as breast support decreased. Therefore, future recommendations may include some individual comparisons, as it is evident that changes in breast support influence individual subjects differently.

Burton, Patricia A. Mechanical and muscle activation characteristics during crouch stance balance in children with spastic cerebral palsy, 1996. Ph.D., University of Oregon (Marjorie H. Woollacott). (166pp 2f $8.00) PE 3633

Balance control has been identified as one of the major underlying deficits in children with spastic diplegic cerebral palsy. Two approaches have been identified to study balance control parameters in children and adults: the neurological approach focusing upon the muscle activation patterns in balance control and the biomechanical approach with emphasis on the body configuration changes during balance responses. The intent of this investigation was to identify the mechanical and muscle activation differences exhibited during crouch stance in children with spastic diplegia, as well as typically developing children. Since orthoses are prescribed to correct crouch stance, the effect of their application was explored in the two populations of children.

Fewster, Jonathan B. The role of musculoskeletal forces in the human walk-run transition, 1996. M.S., Oregon State University (Gerald A. Smith). (188pp 2f $8.00) PE 3637
This investigation examined the possible role of musculoskeletal forces in the human walk-run transition. In order to measure these forces a treadmill was constructed which allowed the measurement of vertical ground reaction forces while subjects walked and ran at prescribed speeds. Validation proved the device to be accurate and reliable in measuring the midstance vertical ground reaction forces which were analyzed in this study. Ten untrained runners were recruited from the University population and paid for their participation in this study. To differentiate the roles of speed of locomotion and musculoskeletal force, both speed and subject weight were manipulated. Speed was controlled by the treadmill operator and weight was added to the subjects in the form of a weight vest of approximately 15% body weight. Each subject’s preferred transition speed was determined for the weighted and unweighted conditions. Following this determination, each subject’s midstance vertical ground reaction forces were measured while walking and running over a range of speeds for both weight conditions. The force at transition was consistent for the two conditions for the subjects measured, indicating that musculoskeletal force may have a role in the transition. However, speed of transition was also consistent, not allowing differentiation of the two variables. Mapping the midstance forces of each gait versus speed of locomotion illustrated running to have a significant increase in force at the preferred transition speed. A trend of increasing variability of force at and above the preferred transition speed was evident for walking. This instability may facilitate or prompt the change from walking to running. As a result of this investigation, musculoskeletal forces may be considered to have some influence on the human walk-run transition.

Fujimoto-Kanatani, Koichiro Determining the essential elements of golf swings used by elite golfers, 1995. Ph.D., Oregon State University (Gerald A. Smith). (707pp 8f $32.00) PE 3643

The golf swing involves a complex sequence of body movements which adjust according to the demands of a given shot. The purpose of this study was to determine common characteristics and essential elements of the golf swing under various conditions. The swing patterns of thirteen elite professional golfers were analyzed using three-dimensional kinematics to determine the essential elements of optimal movement patterns for distance (DS; IW), accuracy (AS; 8I), and intermediate (IS; 3I) shots, and a general model of golf swings. Two high-speed video cameras (250 frames per second) recorded frontal and sagittal views of the golf swings. Three-dimensional data were subsequently normalized across; (a) duration of each swing (N1) and (b) range of values and duration (N2). For these normalized data sets, F and t-tests were calculated for each kinematic variable for each point in normalized time across conditions. An ensembled plot was created for each data set and commonality and uniqueness analysis techniques were used to determine the essential elements of the golf swing. Despite similarities in the temporal characteristics of the golf swing across conditions, significant differences were observed in the top of swing positions (TOS). Lower body TOS preceded upper body TOS which preceded club TOS (p<0.01). This sequencing suggested the existence of a “wind up motion” preceding downswing. The range of rotation for the hip, shoulder, and golf club segments were significantly different across conditions (DS>IS>AS, p<0.05). Adjustment in the rotations depended upon the club selection and was proportional to the duration of the swing and the range of motion of the three segments. Commonality analysis results indicated that an optimal golf swing may be represented by a single model rather than a specific model for each golf club. The critical element during the swing was the constraint of the right knee and hip during the take away phase. During take away, the lower body rotated about the right leg while the upper body rotated about a point near mid-shoulders. For all clubs, the “wind up motion” initiated the downswing phase and was perhaps responsible for an initial delay of wrist uncocking during this phase.

James, Charles R. Effects of overuse injury proneness and task difficulty on joint kinetic variability during landing, 1996. Ph.D., University of Oregon (Barry T. Bates, Janet S. Dutek). (195pp 3f $12.00) PE 3654

The purpose of the study was to investigate the effects of lower extremity overuse injury proneness and task difficulty on joint kinetic variability. Ten subjects from each of two groups (healthy control and overuse injury prone) performed 10 step-off type landings from a platform (three heights: 50, 100, and 200% of the subject’s maximum vertical jump, MVJ). Force platform (1000 Hz) and high speed video (200 Hz) information was collected and used to compute right lower extremity joint moment (ankle, knee, and hip), tibial compressive, and knee joint shear force values during the impact phase (0-100 ms post contact). Peak force values were selected and used to compute variability across 10 trials for each subject and height. Variability values were pooled by group and height classification and were used for group and single subject statistical analyses A mixed two-factor Repeated Measures Multivariate Analysis of Variance (RM-MANOVA; group design) technique was used to evaluate potential differences between subject groups and among heights (p < 0.05). Twenty one-factor MANOVAs were prepared to evaluate single subject responses among heights. Group results showed the between subject main effect difference was not significant (p < 0.05), but the landing height effect and group by height interaction were significant. Results of planned comparisons for individual variables suggested a possible group difference for the ankle variable. Planned comparisons also suggested greater joint kinetic variability
for higher heights, but with differential response patterns for each subject group. Large correlations among dependent variables precluded the single subject MANOVA evaluations in favor of the planned univariate tests (planned comparisons). Single subject planned comparisons revealed differential height responses among subjects. The hip moment appeared to be the force variable most sensitive to height changes for the healthy group (6/10 subjects) and the three moment variables were equally sensitive for the injury prone group (5/10 subjects each). In conclusion, task difficulty increases might result in greater variability in some joint force variables. Similarly, persistently healthy subjects might be less variable for some joint force characteristics than their overuse injury prone counterparts suggesting a possible connection between variability and musculoskeletal health and injury.

Johansen, Michelle K. Gender differences in walking with respect to movement of the pelvis, 1996. M.S., University of British Columbia (D. Sanderson). (97pp 1f $4.00) PE 3656

Biological gender differences in walking and running have seldom been explored. Historically, women have been described as being less able to efficiently perform the tasks of walking and running due to structural differences from men. The supposed “wide pelvis” of the female has been used as justification for women’s exclusion from activity. The wider pelvis of the female has also been used to suggest that females are more prone to injuries in activity, especially at the knee because of a larger quadriceps angle (Q-angle). Social scientists have suggested that gender differences in walking, if indeed there are any, could possibly be explained by social and cultural factors as much as biological factors. By comparing men and women while walking and then introducing a mechanical factor which has a sociological influence and comparing them again, some answers may be found as to whether differences thought to occur between men and women while walking are actual biological differences or socially constructed differences. This study evaluated whether kinematic differences existed between men and women during walking. Male (n=9) and female (n=9) subjects were recruited for this study. Both sexes walked barefoot on a treadmill at two different speeds, slow (0.89 m/s) and fast (1.45 m/s), while being video taped from the front, rear and sagittal views. The female subjects also walked a second time in high heeled shoes (heel height = 8.0 cm) following the same protocol. Reflective markers were placed over the following anatomical landmarks: 4th lumbar vertebrae, left shoulder, greater trochanter, lateral condyle of the femur, lateral malleolus, heel and fifth metatarsal, bilaterally on the iliac crests, anterior superior iliac spines, patellae, tibial tubercles, posterior superior iliac spines and gluteal muscles. The dynamic Q-angle during the stance phase of walking was measured from the front view video. The mean area moved by each of the rear view markers was calculated from an in-house software program that analyzed the rear view video. Maximum and minimum hip, knee and ankle angles were calculated from the sagittal data. Nine anthropometric measures were measured from each subject. The static Q-angle, bi-iliocristal and bi-trochanteric widths, waist, thigh and bi-trochanteric circumferences, height and weight were all noted. A two (speed)-by-two (gender) ANOVA was performed on all of the anthropometric and kinematic data with the significance level being set at p< 0.05. The results indicated that with an increase in walking speed there was an increase in marker movement for both the men and the women. Some structural and kinematic gender differences were noted. Notably, the iliac crests of women moved more than the men’s. The static and dynamic Q-angles for the women were greater than the men’s. The maximum hip angle reached during stance was greater for the men than the women. The high heels effected the ankle and hip angles but not the knee angle. The dynamic Q-angle significantly decreased when high heels were worn during walking. The above results suggest that men and women do walk differently and biomechanical factors play a small role in perceived gender differences in walking. It is important that these differences are not used to negatively impact women in terms of their perceived abilities and the access they have to physical activity.

Juergens, Cheryl A. A kinetic and kinematic comparison of the grab ad track starts in competitive swimming, 1995. M.S., Oregon State University (Debra J. Rose). (193pp 2f $8.00) PE 3657

In competitive swimming a spread in time of only 0.10, and 0.16 seconds constituted the difference between finishing second and seventh, and first and eighth, respectively, in the women’s 50 yard freestyle at the 1993 NCAA Division III National Swimming & Diving Championships. Based on data collected over a period of years Maglischo (1993) noted that “improving the start can reduce race times by at least 0.10 second” (p. 544). Therefore it is beneficial to the outcome of a race to direct attention to maximizing the effectiveness of the racing start. The primary purpose of this study therefore was to compare kinetic and kinematic components of the grab and track style starts. During the past two decades extensive kinematic research has been done using cinematography. These studies used time, velocity, displacement, and the measure of angles (i.e. at takeoff and entry) to measure the relative effectiveness of various racing starts. Conversely, there has been limited analysis of racing starts using kinetic measurements. Four kinetic and five kinematic variables were evaluated in this study to compare the relative effectiveness of the starting techniques. Ten female varsity swimmers, who had used both starts interchangeably in competition, were selected for this study. Force components were obtained directly from a Kistler force platform. Blocktime, horizontal and
vertical impulse, and average horizontal and vertical force values were obtained in subsequent analysis of the Force-time data. Each subject was video taped as she executed three trials of each start. The video data were digitized and then analyzed using two dimensional video analysis techniques. The type of start technique used randomly ordered. Kinematic variables of horizontal and vertical displacement of the center of mass, average horizontal velocity and vertical velocity were also obtained from the video data in order to determine which of the two starting techniques (i.e. grab vs. track) was the most effective. 2x10 (starting technique x subject) repeated measures Analyses of Variance indicated significant differences (p<0.01) between the starting styles for five of the nine dependent variables measured which provided support for the original contention that the track style start was the more effective of the two racing start techniques investigated. The results of this study provide support to the empirical and observational findings of earlier researchers.

Kern, Jack C. Tennis racket coefficient of restitution under static and dynamic conditions. 1994. Ph.D., Texas Woman’s University (Jerry D. Wilkerson). (152pp 2f $8.00) PE 3658

The coefficient of restitution (COR) of a tennis racket was evaluated in two successive investigations. The purpose of the first investigation was to examine the effects of five independent variables on COR under static laboratory conditions. Twelve rackets, four each classified as stiff, average, and flexible, were subjected to four ball-to-racket impacts under varying levels of string tension, string gauge, grip firmness, and impact velocity. Multiple exposure photographs of each impact were produced with the use of a 35mm camera and stroboscopic light. COR values were calculated by digitizing pre- and post-impact ball images and entering the digitized values in a computer program. Significantly higher (p < .01) COR values were produced with stiffer rackets, lower string tensions, a firmer grip, and slower impact velocity. A significant interaction also indicated that higher string gauge produced a greater COR value if used in a stiff racket frame. The two rackets that produced the highest and lowest COR value under varying conditions of racket flexibility, string tension and string gauge were identified for use in the second study. A stiff racket strung with 18 gauge string at a tension of 40 pounds produced the greatest COR value of 0.453, 20% higher than the lowest COR value (0.378) attained from a flexible racket strung with 15 gauge string at a tension of 80 pounds. The purpose of the second investigation was to examine COR in a dynamic setting with human subjects. Sixteen tennis players were divided into two ability groups (recreational and competitive of eight subjects each. Subjects used a forehand stroke to hit four service returns with each racket into a targeted area. Tennis racket COR was calculated with the use of a PEAK5 3-D analysis system. No difference in COR values was indicated between ability groups, but a significant 19% difference was determined between the two racket types. It was concluded that the capabilities of the tennis racket were not altered by human interaction and that relative COR differences were similar under static and dynamic conditions.

Rauch, Mignone. Effects of step height variation on knee joint moments of force during lateral step-up exercises, 1994. M.S., Texas Woman’s University (Jerry Wilkerson). (104pp 2f $8.00) PE 3667

The purpose of this study was to investigate differences in peak knee moments of force during lateral step-up (LSU) exercises of 5-, 15-, and 25-cm heights. High-speed film, anthropometric, and forceplate data were collected for 24 females at Texas Woman’s University. Mean knee moments of force in the sagittal plane were calculated to be 107.770 Nm at 5-cm LSU, 136.891 Nm at 15-cm LSU, and 140.125 Nm at 25-cm LSU. Transverse plane mean knee moments of force were 15.816 Nm, 22.153 Nm, and 23.426 Nm for 5-, 15-, and 25-cm LSU, respectively. Comparison of mean peak knee moments of force of the three heights within the sagittal and transverse planes made with two one-way repeated-measures ANOVAs revealed significant differences at the p<.01. Post hoc analysis showed significance in mean peak moments between the 5-cm and 15-cm, and between the 5-cm and 25-cm LSU for both the sagittal and transverse planes. Knee peak moments of force in the sagittal and transverse planes increased as step height increased.

Timmons, Scott A. Increasing vertical jump: a comparison between two training programs, 1996. M.A., Ball State University (William C. Thompson). (40pp 1f $4.00) PE 3675

The purpose of this study was to compare the relative impact of two established jump training programs on increasing vertical jump ability. Twenty-four male high school basketball players were randomly assigned to two groups. Each group participated in a jump training program using either plyometrics or heavy rope jump routines. The players were tested prior to and after a six-week, 18 day period. A standard test for vertical jump was used. The test had two trials measuring vertical jump ability. The test required the subjects to stand at attention with their dominant arm stretched up the wall. The height their arm reached was then measured. The subjects were then instructed to crouch down and explode up as high as possible. The height their arm reached during the jump was measured and the procedure was repeated. The difference between the standing height and the jumping height was the final score. The best score of the two trials was then recorded. The subjects were randomly assigned to group A) Heavy Rope, or B) Plyometric training program with 12 subjects in each group. Both groups were
split into six pairs with each pair starting on a different exercise. Two sets of 30 seconds were performed at each exercise with a rest period of 30 seconds as the partners took turns. Each pair would rotate until all six exercises were performed. There were a total of 18 days of training with each group meeting three times a week for the entire six weeks. Prior to the start of each day’s activities, each group participated in rigorous stretching and flexibility exercises along with a minimal amount of form running techniques. Data was analyzed using a statistical analysis of variance (ANOVA). The analysis showed there was no significant difference between the pre-test and post-test scores and there was no significant difference between plyometric and heavy rope jump programs. Therefore, the hypothesis can be rejected. This data is not in agreement with previous findings. Reasons for these findings may be due to the long distance running that was part of the conditioning program. Other possible factors leading to these results may be due to the duration of the training program. It would be interesting to repeat this study using a larger sample size, longer duration of training time, using only the jump routines with no distance runs, and using a smaller unit of measurement to calculate the jump heights.


Overuse injuries to the lower extremity are of major concern to both participants and researchers. Of all injuries to the lower extremity, the knee is one of the most frequently injured sites. The purpose of the study was to investigate mechanical and muscular mechanisms of lower extremity joints during landing from three different heights (0.32 m, 0.62 m and 1.03 m) using three landing techniques (soft, normal, and stiff). Biomechanical models were employed to study muscle activity, energy transfer and dissipation, and joint responses. Nine active male subjects volunteered to participate in the study (18 - 35 yrs). Two video cameras (200 Hz), two force platforms and electromyography (1000 Hz) were used to obtain right foramina canal ratio also differed significantly between the RBG (M=0.73) and RCG (M=0.79) (F [2, 51]=3.19, p=0.05). A significant difference also existed in the mean cervical spinal canal stenosis at C6 between the RBG (M=1.04) and RCG (M=1.02) (F [2, 50]=6.43, p=0.003). A significant difference also existed in the mean minimum ratio between the RBG (M=0.96) and RCG (M=0.95) (F [2, 51]=3.19, p=0.05). A significant difference existed in the mean intervertebral foramina canal ratio between the RBG (M=0.73) and RCG (M=0.79) (F [2, 36]=3.48, p=0.04). The mean minimum intervertebral foramina canal ratio also differed significantly between the

**SPORTS MEDICINE**


The purpose of this investigation was to compare the association between cervical spinal canal stenosis and intervertebral foramina canal stenosis and transient upper extremity paresthesias (burners). The research design consisted of a prospective burner group (PBG) (N = 8), retrospective burner group (RBG) (N=31), and retrospective control group (RCG) (N=15). Subjects were evaluated radiographically to determine the presence of cervical spinal canal stenosis and intervertebral foramina canal stenosis of C3 through C6 as well as cervical congenital anomalies, lordosis, disc narrowing, and abnormal osteophytes. Descriptive and clinical data were assessed using the Burner Documentation Instrument (BDI). A wide range of injury mechanisms were identified for PBG subjects with the predominant mechanism being contralateral neck flexion with concomitant shoulder depression. Other recorded injury mechanisms were neck hyperextension, contralateral neck flexion, neck hyperextension with contralateral neck flexion, shoulder depression, and contralateral neck flexion with shoulder depression and rotation. All subjects were radiographically evaluated. Although the mean cervical spinal canal ratios were greater for the RCG (M=1.02) than for either the PBG (M=0.96) or RBG (M=0.94), these differences were not statistically significant (F [2, 51]=2.20, p=0.12). A significant difference existed in the mean cervical spinal canal ratio at C6 between the RBG (M=0.96) and RCG (M=1.04) (F [2, 50]=6.43, p=0.003). A significant difference also existed in the mean minimum ratio between the RBG (M=0.86) and RCG (M=0.95) (F [2, 51]=3.19, p=0.05). A significant difference existed in the mean intervertebral foramina canal ratio between the RBG (M=0.73) and RCG (M=0.79) (F [2, 36]=3.48, p=0.04). The mean minimum intervertebral foramina canal ratio also differed significantly between the
Exercise heart rate and minute ventilation (VE) were recorded periodically to assess exercise intensity. Samples were analyzed for chloroform as previously described by Winberry et. al. (1988) and was detected in all breath samples. Exercise HR ranged from 129-146 and 149-182 bpm for the male and female subject, respectively. Exercise VO2 averaged 1.5 and 1.8 L·min⁻¹ for the male and female subject, respectively. Results demonstrated a near 100 fold increase in exhaled breath [chloroform] within 60 minutes of exercise and exposure to pool water. Breath concentrations increased from 3.18 to 371.73 µg/m³ and 3.46 to 339.91 µg/m³ for the male and female subject, respectively.

Pool air [chloroform] ranged from 145.28 and 147.64 µg/m³ during the entire exposure period. Although chloroform removal was rapid (approximately 10 fold within 90 minutes recovery), values did not return to pre-exercise levels within 180 minutes. Evidence showed that both inhalation and dermal routes of exposure were equally responsible for total body burden. Using VEBTPS (L·min⁻¹), total exposure time, an EPA efficiency coefficient for uptake (0.7), and ambient chloroform concentration, the estimated total dose of exposure was 1429 µg and 1532 µg chloroform for the male and female subject, respectively (using an equation developed by Jo et. al., 1990). Although the estimated dose is below EPA standards, the potential for health risk may be seen for those athletes exposed to pool water for extreme periods of time in pools with poor air ventilation and high pool water chloroform concentrations.

Bachler, Levi R. An EMG study of four elastic tubing closed kinetic chain exercises: a preliminary study, 1994. M.S., Brigham Young University (Shane S. Schultlies). (95pp If $4.00) PE 3627

Elastic tubing closed kinetic chain exercises (CKCE’s) are a popular part of rehabilitation. However, no research has been performed to determine their muscular effects. Twenty two subjects performed four elastic tubing CKCE’s at resistance levels of 10%, 20%, and 30% of their body weight. Surface electrodes used for the collection of electromyographical data were placed over the vastus medialis oblique, vastus lateralis, semitendinosis, and biceps femoris. A two-way analysis of variance (ANOVA) with repeated measures (p<.05) was used to determine differences between exercises and resistance levels. An ANOVA was also used to determine the statistical differences in the hamstring/quadriceps ratio. Significant differences were found between the 10% and 30% resistance levels. The vastus lateralis and biceps femoris showed statistical significance differences between the four exercises. The forward pull produced the greatest hamstring/quadriceps ratio (1.88). Based on the findings, these CKCE’s do not promote a strength response and the string/quadriceps ratio (1.88). Based on the findings, these CKCE’s do not promote a strength response and the forward pull produces the most desirable hamstring/quadriceps ratio (1.88). Based on the findings, these CKCE’s do not promote a strength response and the forward pull produces the most desirable hamstring/quadiceps ratio for rehabilitation. Key Words: electromyography, closed chain exercise, elastic tubing, rehabilitation.

Berkoff, David C. Chloroform exposure and dose determination associated with competitive swimmers during a two-hour swim practice, 1995. M.S., University of Montana (Brent C. Ruby). (55pp If $4.00) PE 3629

One male and one female subject were submitted to a swimming protocol (l0x100yd, 22x250yd) in which exhaled breath samples were collected using a Summa(r) single breath container system. Sampling occurred prior to, during exercise (120 minutes) at select intervals and post-exercise in a chloroform-free environment (180 minutes). Exercise heart rate and minute ventilation (V,E) were recorded periodically to assess exercise intensity. Samples were analyzed for chloroform as previously described by
rehabilitation had on acute ankle sprains. Thirty subjects with acute ankle sprains were randomly assigned to HBO or Sham HBO treatment groups. The HBO treatment group received 3 HBO treatments in seven days with 100% oxygen at 2 Atmospheres/Absolute (ATA) pressure (n=15). The Sham HBO treatment group received 3 Sham HBO treatments in seven days with medical air at 1.2 ATA (n=15). Treatments were 90, 60, and 60 minutes for sessions 1, 2, and 3, respectively. All subjects were evaluated by an orthopaedic surgeon 72 hours post injury. The following dependent variables were used to assess the effect HBO treatment had on acute ankle sprains: perceived pain; edema; active and passive ranges of motion for dorsiflexion, planter flexion, inversion, and eversion; function; and recovery time of the injured ankle. One, 2x1 ANOVA and eleven, 2x3x2 ANOVAs with repeated measures at the p<.05 alpha level were used to analyze the 12 dependent variables with regard to acute ankle sprains. The F values for group indicated no significant differences between the HBO and Sham HBO treatment groups regardless of session and test. The F values for session indicated significant main effects regardless of test and group in all dependent variables except recovery time. The F values for test indicated significant main effects regardless of session and group in all dependent variables except active ankle plantar flexion, active ankle eversion, passive ankle plantar flexion, and recovery time. The results indicated improvements in perceived pain, edema, active and passive range of motion (dorsiflexion, planter flexion, inversion, and eversion), function, and recovery time with regard to acute ankle sprains for both HBO and Sham HBO treatment groups. Additionally, significant interactions were revealed between sessions and tests for both groups regarding perceived pain, active and passive ankle dorsiflexion, and function. Subsequent tests for simple effects (Hotelling's t-squared statistic [TSQ]) at the p<.05 alpha level and pairwise t-tests with the p level adjusted via the Bonferroni technique to determine where significant differences occurred were performed. The results indicated a decrease in perceived pain and an increase in active ankle dorsiflexion from pretest to posttest for the Sham HBO group only, and increases in passive dorsiflexion and function from session to session and pretest to posttest for both groups. In conclusion, HBO treatment had no significant effect on the reduction of morbidity of the acute ankle sprains. The natural healing process and standard rehabilitation may have improved the recovery of the ankle sprains regardless of treatment group. Although not significant and after removal of recovery time data of one outlier, the HBO treatment group recovered 5.14 days sooner than the Sham HBO treatment group.


The purpose of this study was to evaluate the clinical, functional, and radiographic outcomes of the Conventional Boyd-Anderson Procedure (CBDP) and the Modified Boyd Anderson Procedure (MBDP). Thirteen (72%) of 18 patients who had distal biceps tendon repairs consented to participate in this study: 5 CBDP subjects and 8 MBDP subjects. All 13 subjects were male and were, on average, 43 years of age. The Data Collection Instrument (DCI) for this study was developed by the investigator after reviewing the appropriate medical literature and in consultation with a panel of experts. The DCI consisted of two sections, subject information (Section I) and clinical follow-up (Section II). The subject section of the DCI consisted of questions pertaining to side of injury, limb dominance, occupation before and after surgery, mechanism of injury, rehabilitation program, pain level, and pre- and post surgery activity levels. The clinical section of the DCI consisted of information pertaining to surgical procedure and clinical and radiographic follow-up. Objective measurements were assessed for elbow and forearm range of motion (ROM), forearm and upper arm circumference, radial nerve sensation, biceps tendon reflex, blood pressure, and isokinetic concentric peak torque for elbow flexion, forearm supination, and upper extremity function. Results revealed subjects were very satisfied with the post-surgical outcome of their surgery. Orthopaedic findings were favorable with respect to time to surgery, return to preinjury activity levels post-surgery, patient satisfaction of surgical outcome, post-surgical pain level, and overall clinical results. Radiographic findings resulted in no clinically remarkable signs of heterotopic ossification and/or proximal radioulnar synostosis formation. Elbow flexion, forearm supination, and functional concentric peak torque results were within 10% of the contralateral nonsurgical arm. Overall, clinical, functional, and radiographic outcomes were similar between the CBDP and MBDP.

Dumke, Charles L. Protective mechanism of estradiol on eccentrically induced muscle damage, 1995. M.S., University of Montana (Brent C. Ruby). (82pp 1f $4.00) PE 3636

The mechanisms that tie the descriptive parameters associated with delayed onset muscle soreness (DOMS), including an increase in serum creatine kinase (CK) activity, and subsequent damage to the contractile filaments of the myofibrils remain unknown. Females exhibit a lower serum CK activity post-exercise compared to males, this was later shown to be the effect of the female sex hormone estradiol (E2). The effects of E2 on CK release and muscle damage was assessed in female rats following eccentric treadmill exercise. Female rats were ovariectomized prior to sexual maturity and treated with an E2 (n=5) or placebo (n=4) pellet insert for 21 days prior to the exercise bout. Exercise consisted of one hour of downhill (-10°) treadmill running at a speed of 19 m·min⁻¹. Serum
samples for CK activity were obtained at pre, 0, 2, 6, 12, 24, and 48 hours post-exercise. The soleus muscle was prepared for light and electron microscopy 48 hours post-exercise. CK release in the placebo rats was significantly (p<.05) greater than pre CK levels at times 0, 2, 6, and 24 hours, with the peak response occurring at time 0. CK release in E2 rats was significant at time 0, and 2 hours post, with the peak response at 2 hours. Placebo rats exhibited greater CK activities at all time points except for 2 hours post-exercise. Microscopic damage was only located in two placebo treated animals, therefore it is difficult to speculate as to the precise protective mechanisms of E2. The effects of E2 seem to be limited to CK release and not directly related to that of myofibril damage. This supports the work of others who have suggested that the blood marker CK is not necessarily a direct measure of observed skeletal muscle damage.

Froehling, Lori A. Effectiveness of exercise versus exercise plus tape in the management of females with patellofemoral pain, 1996. M.S., University of Wisconsin-La Crosse (Marilyn K. Miller). (86pp 1f $4.00) PE 3642

The difference among no treatment, use of traditional physical therapy exercises, and use of the same exercises plus patellar taping was investigated. Thirty female Ss (ages 18-43) with nontraumatic onset of knee pain of at least 6 week duration were assigned to an exercise, exercise plus tape, or control group. Ss in the exercise and exercise plus tape groups were instructed in flexibility and strengthening exercises which were progressed over 8 weeks. Ss in the exercise plus tape group also performed patellofemoral taping based on McConnell principles for 2 to 4 weeks. Data were gathered on subjective reporting of symptoms with the Hughston Sports Medicine Foundation, Inc.: Initial Knee History, symptom reproduction with patellofemoral orientation, and surface electromyography of vastus medialis oblique (VMO) and vastus lateralis (VL) recruitment and ratio. The results indicated that Ss in the exercise plus tape group reported a significant decrease in subjective symptoms and progressed to pain free functional activities and improved VMO recruitment more quickly than subjects who used exercise alone, or those who received no treatment. The mechanism for this change was unclear but did not appear to be related to PF orientation or VMO:VL ratio which did not differ between groups or change over time.

Hamm, Tracy M. Marathon performance time in relation to age, physical characteristics, previous running experience, and various training indices of female distance runners, 1995. M.S., University of Wisconsin-La Crosse (Marilyn K. Miller). (50pp 1f $4.00) PE 3649

The purpose of this study was to determine the correlation between marathon performance time (MPT) and age, physical characteristics, past running experience, and various training indices. One hundred fifty female distance runners, ages 25 to 50 who had completed at least one marathon and resided in the states of Wisconsin or Minnesota were randomly selected by computer through Media Consultation Services and the International Race Network to participate. Eighty-two percent (N=123) of the questionnaires were returned after 6 weeks. Data were analyzed using descriptive statistics, Pearson product correlations, and stepwise regression analysis. The min per mile pace ran at distances of 10-15 miles (P10-15; r=.83), min per mile pace from 5-10 miles (P5-10; r=.81), and fastest mile time (FMT; r=.76) correlated highly to MPT. The following prediction equation for MPT (r=.77; p<.001) was established using regression analysis:

\[ MPT(hr) = 0.346762(P10-5) - 0.093685(T59) + 0.15369(FMT) + 0.31167 \]

These findings suggested that 3 training variables will contribute to improved performance times. The pace when running distances of 10-15 miles, the number of times per week that distances of 5-9 miles are ran (T5-9; r=.44), and the fastest mile time were the variables most predictive of final MPT. Several recommendations were made for future investigation of training indices related to MPT. These included measurement of the max VO2 and on site surveying for a more homogeneous sample of runners.

Harris, Shane T. The effect of ultrasound on temperature rise in the preheated triceps surae muscle group, 1994. M.S., Brigham Young University (David O. Draper). (65pp 1f $4.00) PE 3650

Therapeutic ultrasound is an effective deep heating modality commonly applied alone or following cooling or heating of the treatment area. The purpose of this study was to examine the tissue temperature rise in the human triceps surae muscle group following ultrasound with prior heating, via a silicate gel hot pack. Twenty-one male and female subjects volunteered and were randomly assigned to one of two treatment groups: ultrasound preceded by a 15 min hot pack treatment, or ultrasound preceded by a 15 min application with a gel silicate pack at room temperature (sham pack). The hot pack was stored in water maintained at a temperature of 75 C. The ultrasound was administered for 10 min at an intensity of 1.5 W/cm². Tissue temperature was measured every 30 sec using 23 gauge hypodermic micropores inserted intramuscularly at 1 and 3 cm depths in the anesthetized triceps surae muscle group. We discovered that the overall heating effects were greater following the hot pack/ultrasound treatment. We concluded that in situations requiring increased heating, such as when collagen fibers need
stiffness, ultrasound with prior heating for 15 min can be beneficial. Key words: ultrasound, tissue temperature rise, superficial heating

Harrison, Maria E. G. The biomechanical effects of prolotherapy on traumatized Achilles tendons of male rats, 1995. M.S., Brigham Young University (Earlene Durrant). (75pp 1f $4.00) PE 3651

Research shows that healthy ligaments and tendons of rabbits, injected with proliferant solutions increase their tensile strength. This study investigated this strength on traumatized rat tendon treated with Pomeroy or Faber proliferant solutions. The Achilles tendons of 90 male rats were traumatized twice, at 21-day intervals, by dropping a 8.9 N weight from a height of 15.24 cm on the entire length of the tendon. The animals were randomly assigned to six experimental (saline and proliferant treated) and two control (non-treated) groups. After 7 weekly treatments, the tendon was dissected, mounted on a linear disseminator, and pulled to failure. A strip chart recorder registered the results and the load-deformation curve was analyzed for ultimate tensile strength (UTS), modulus of elasticity (ME), and the elastic energies at the first yield zone (EY1), ultimate strength zone (EUS), and total failure zone (TEF). Exercise and rest were also variables. The PROC MIX (SAS version 6.10) was used to calculate means and SEE for all variables. The UTS (rest) and ME (rest) control means were 95±5 N, and 62±4 N/mm. Experimental measurements for the same variables ranged between 102±5 and 109±5 N and between 60±4 and 62±4 N/mm respectively, demonstrating no statistical significance (µ=.05). Similar findings were present in all other variables. Apparently, injured rat tendon responds differently to proliferant treatments, the tensile strength is not increased as previously reported in studies using healthy ligaments of rabbits. KEY WORDS: Prolotherapy, proliferants, ultimate tensile strength, modulus of elasticity, elastic energy.


The purpose of this study was to determine the effect of a softshell prophylactic ankle stabilizer (PAS) (DonJoy RocketSoc) on performance in events involving speed, agility, and vertical jump during long-term use. The events examined were the 80-ft sprint, 40-ft shuttle run, and vertical jump. Subjects were 24 Council Rock High School varsity and junior varsity boys and girls basketball team members who had no history of functional ankle joint instability, or prior experience with PASs. Subjects were randomly assigned to either a PAS (n=11) or nonbraced control (n=13) group. Subjects in the PAS group were bilaterally braced during every practice, game, and test session during the 1995 to 1996 basketball season. Control subjects did not wear any type of ankle brace or have their ankles taped during any practice, game, or test session. Data analysis consisted of three 2x4 analysis of variance (ANOVA) with repeated measures on the independent variable of time (beginning of season, 1 month into season, 2 months into season, and 3 months into season). Ankle support condition was a between-subject factor. The three dependent variables were 80-ft sprint, 40-ft shuttle run, and vertical jump. Within the limitations, delimitations, and research findings of the present study, use of the DonJoy RocketSoc had no significant effect on 80-ft sprint, 40-ft shuttle run, or vertical jump performance over a 3-month basketball season. However, there was a significant difference in 80 ft sprint and 40-ft shuttle run times across test sessions regardless of treatment group. In conclusion, the DonJoy RocketSoc neither enhanced nor inhibited performance in activities involving speed, agility, or vertical jump. The extent to which the research findings can be generalized to other PASs, sports, levels of competition, and injury status is unknown and warrants further study.

Pederson, Troy S. The effects of spattting and ankle taping on inversion before and after exercise, 1995. M.S., Brigham Young University (Mark D. Richard). (75pp 1f $4.00) PE 3665

The purpose of this study was to compare the effects of spattting, tape with spattting, taping, and no tape on the amount and rate of inversion of the ankle before and after exercise. We filmed fifteen male rugby players at 60 Hz while standing on a platform that suddenly inverted the right ankle. Amount and rate of inversion was computed from the digitized data of each subject in four treatments: no tape, spattting, tape with spattting, and tape. Five trials were measured before and after a 30 minute period of drills. The combination of spattting and tape was the most effective in reducing inversion rate and range of motion before and after exercise. Spattting with tape reduced the rate and amount of inversion by 261.4 d/s and 17.3 before exercise and 216.3 d/s and 15.5 after exercise. Spattting alone reduced the rate and amount of inversion range of motion by 202.8 d/s and 12.9 before exercise and 160.0 d/s and 11.2 after exercise. All three taping treatments were effective in reducing amount and rate of inversion over the no tape treatment. Exercise loosens the tape, but there may be a functional restriction of the amount and rate of inversion after exercise. Key words: Spattting, Ankle Taping, Taping, Sprain, Inversion, Ankle Injury.

Rose, Shannon. The rate of temperature reduction in deep human muscle following thermal ultrasound, 1995. M.S., Brigham Young University (David O. Draper). (95pp 1f $4.00) PE 3668
Background and Purpose. As a result of injury, many patients are plagued with scar tissue. An effective way to decrease scar tissue is to utilize stretching with ultrasound therapy. The purpose of this study was to determine whether intermittent hyperbaric oxygen (HBO) would increase the rate of recovery from a model muscle injury, 70 subjects performed intense eccentric contractions on a leg dynamometer (300 repetitions in 30 minutes). They were then treated in a monoplace hyperbaric chamber in two separate phases of this study. In the first phase, there were 4 groups: control, HBO, delayed HBO, and sham. A 3-day HBO group, 5-day HBO group, and a sham group made up the second phase. The HBO groups breathed 100% oxygen for 60 minutes at 2.0 atmospheres absolute (ATA). The sham group breathed 21% oxygen for 60 minutes at 1.2 ATA. Recovery was monitored by testing eccentric strength pre- and postexercise, 48h postexercise, and 96h postexercise and pain perception through daily pain scales (visual analogue scales). In phase I, a significant difference (p=0.021) in recovery of eccentric torque was noted; in the HBO group compared to the delayed HBO, control, and sham groups (69.2Nm vs. 44.9Nm, 47.3Nm, and 49.6Nm, respectively). In phase II, significant differences were observed between the 5-day HBO and sham groups. From the raw strength data, the mean torque value of the HBO group was significantly greater than the sham group at 96 hours postexercise (p=0.023; 191.9Nm and 147.2Nm, respectively). For strength recovery from postexercise to 96h postexercise, a significant difference was noted between the same groups at p=0.005 (54.9Nm versus 43.3Nm). No significant differences were noted for pain perception in either phase or among combined data. These results are complicated by the lack of similarity between the 3-day and 5-day HBO groups in phase II. The 3-day group had 3 out of 10 anomalous sets of data for eccentric
torque, which contributes to much of the group differences. The results suggest that treatment with hyperbaric oxygen may enhance recovery of eccentric strength from a delayed onset muscle soreness injury.

Van den Eikho, Victoria E. The effects of ankle sprains and external support on muscle onset latencies, 1996. M.S., University of Oregon (Louis R. Osternig). (86pp 1f $4.00) PE 3676

There is little or conflicting evidence regarding the effects of ankle sprains and external support on peroneal muscle onset latencies during anterior (AP), posterior (PP), and inversion (ROT) perturbations. In this study, AP, PP, and ROT perturbations were administered to 15 subjects with moderate unilateral ankle sprains (INJ group) and 5 subjects with no history of ankle injury (UNI group), under four conditions: barefoot, ankles taped, with lace-up braces and with semirigid braces. The onset latencies of five muscles in each leg were measured. The data demonstrated no significant differences between conditions, or between peroneal muscles on the sprained and normal limb in the INJ group during ROT. There were significant differences between the right and left muscles in both groups, which suggests that limb dominance may play a role in muscle onset latencies. It was discovered that the peroneus longus muscle is activated in AP, PP, and ROT perturbations.

Wegner, Michael S. The accuracy of various indirect determinations of body composition: comparison with a multicomponent criterion model, 1995. Ph.D., Oregon State University (Christine Snow-Harter). (140pp 2f $8.00) PE 3677

Accurate determinations of body composition, fat mass (FM) and fat free mass (FFM) are of interest to scientists as well as many individuals who serve as health and fitness practitioners. Currently, researchers and practitioners use a variety of indirect methods to determine body composition. Traditional methods of estimating percent body fat include hydrostatic weighing, skinfold anthropometry and bioelectrical impedance. Dual energy x-ray absorptiometry (DEXA), utilized most commonly to determine bone mineral content, has recently been proposed to be an accurate measure in the assessment of body composition. Hologic Inc., manufacturers of the QDR-1000 W bone densitometer, have recently developed tissue composition software which can be used to estimate percent body fat in humans. Although the Hologic QDR-1000 W has been extensively evaluated for its accuracy in measuring tissue composition in "vitro", "in vivo" validation studies of body composition have been few. Therefore, the purpose of this study was to evaluate the accuracy of the Hologic QDR-1000 W in determining human body composition by comparing values for percent fat from DEXA to values derived using a multicomponent criterion measure of body composition in a group of 51 women and 50 men aged 19-82 years. Additionally, it was of interest to make comparisons of percent body fat determinations between the multicomponent criterion model and hydrostatic weighing, skinfold measures and bioelectrical impedance. All subjects completed the various body composition procedures used to estimate percent body fat DEXA, hydrostatic weighing (2-component model), skinfold anthropometry and bioelectrical impedance. The multicomponent (component) criterion model procedures included hydrostatic weighing (body density), DEXA whole body scanning (bone mineral content), and deuterium oxide (D2O) dilution in respiratory water (total body water). Results of this study failed to reveal statistically significant mean percent body fat differences between hydrostatic weighing (2-component model) and the 4-component criterion model (25.2±9.4 vs. 26.7±8.4%, p>0.05) for all 101 subjects. However, differences in percent body fat were found between the 4-component model (26.7±8.4%) and dual energy x-ray absorptiometry (23.2±7.9%), skinfold anthropometry (24.0±85%) and bioelectrical impedance (23.4±7.5%). Among women, hydrostatic weighing (2-component model), DEXA, skinfold anthropometry, and bioelectrical impedance all provided accurate estimates of percent body fat. However, each of the various indirect methods used to predict body composition underestimated percent body fat in men.

Williams, Salena. Effects of a competitive season on body composition in female intercollegiate athletes, 1995. M.S., University of Wisconsin-La Crosse (Nancy K. Butts). (62pp 1f $4.00) PE 3679

This study was designed to compare body composition over the course of a season in several intercollegiate women's athletics teams. Four basketball (BB) players, 18 cross country (CC) runners, 9 gymnasts (GYM), 10 swimmers (SW), and 7 volleyball (VB) players from the University of Wisconsin-La Crosse, an NCAA Division III school, volunteered for the study. Body composition was determined through hydrostatic weighing, and a questionnaire examining the desire to lose or gain weight and aerobic activity pattern was given at the beginning and end of each athletic season. Using a 2-way mixed design ANOVA with repeated measures, the statistical analysis of the body composition variables showed the GYM and SW significantly (p<.05) decreased percent body fat over the course of their seasons. At the early season, CC runners and GYM had significantly (p<.05) less body weight and fat weight (FW) than VB players, SW, and BB players. CC runners also had significantly (p<.05) less fat-free weight (FFW) than all other teams. VB players had significantly (p<.05) greater FFW than the GYM and SW, whereas the BB players only had significantly (p<.05) greater FFW than the gymnasts. Late season differences were the same as early season differences with the exceptions that the BB players no longer had significantly (p>.05) greater FFW than GYM,
During performance of activities that emphasize anaerobic glycolysis to generate energy, a reduction in performance is generally associated, in part, with lactacidosis. As lactate levels rise during the performance of the activity, pH and bicarbonate levels decrease. Strategies designed to buffer lactic acid (LA) have demonstrated ergogenic potential for both sodium bicarbonate (NaHCO₃) and sodium citrate during activities ranging from 1 to 2 minutes’ in duration. The purpose of the present study was to determine if these buffering agents exhibited ergogenic potential during high intensity activity of 4 to 6 minutes duration. Subjects were 7 male and 5 female trained track athletes between the ages of 18 and 33. Each subject participated in a total of 4 competitive 1600 meter races, each scheduled at least 3 days apart. Subjects ingested a treatment (0.4 g/kg NaHCO₃ or 0.5 g/kg sodium citrate) or placebo (calcium carbonate) 2 hours prior to three of the races; one race was used as a control. The order in which the races were run was counter-balanced and randomly assigned. Blood lactate, pH, and bicarbonate levels were measured prior to and immediately following each race. Following the completion of the race, the subjects reported on physical symptoms of gastrointestinal (GI) discomfort they experienced during the run. Means and standard deviations for performance times (in sec) were not different under any condition: HCO₃ (319.2, 30.1); Citrate (321.1, 24.1); Placebo (319.9, 27.3); Control (319.8, 27.0). There was an exercise, but no treatment effect on blood lactate, but there was an exercise and treatment effect on pH and bicarbonate. NaHCO₃ ingestion resulted in more severe symptoms of GI discomfort than any other condition, and ingestion of sodium citrate led to the greatest number of complaints of GI discomfort. It is concluded that the buffering agents had no effect on racing time and that bicarbonate loading is associated with uncomfortable side effects in many athletes.

**PHYSIOLOGY AND EXERCISE EPIDEMIOLOGY**


The purpose of the present study was to assess the physiological effects of performing 3 separate exercise movements (“Wide” step, “Knee lift” and “Lunges”) at 4 step height/cadence conditions (0, 6, 10 inch step height @ 120 BPM and 0 inch step height @ 144 BPM). In addition, the energy expenditure of performing each exercise, under the 4 conditions, was calculated and compared with specific attention given to the metabolic cost of traditional low impact aerobics (0/144) vs. the metabolic cost of the same exercise at the other 3 step heights @ 120 BPM. Lastly, equations were formulated to predict energy expenditure for each exercise based on step height, body weight, and heart rate (HR). Twenty subjects (n=5 males, 15 females; age=23.0 ± 1.9 years; height=167.4 ± 8.1 cm; weight=62.8 ± 9.2 kg; VO₂ max=41.6 ± 6.9 ml/kg/min) participated in 3 testing sessions. During each of the 3 testing days, subjects performed 1 of the 3 specific exercises at each of the 4 different experimental conditions. Each of the 3 testing sessions were random with regard to both the exercise and step height condition. All subjects did not exercise at least 24 hours prior to each session. Oxygen consumption (VO₂), respiratory exchange ratio (RER) and HR were measured during the entire testing procedure. Results of a 3 X 4 analysis of variance (ANOVA) and a Duncan post hoc test indicated a significant main effect for exercise type for all 3 dependent variables of interest (VO₂, HR and Kcal) at p<.05. Specifically, “Lunges” elicited a significantly greater physiological response than the other 2 exercises. A significant main effect for step height for the 3 dependent variables was also demonstrated. Step height/cadence condition 0/144 elicited a greater physiological response than 0/120, but less than the other 2 step conditions. Specifically, 10/120 > 6/120 > 0/144 > 0/120 for all 3 dependent variables. The metabolic cost of 0/120, 0/144, 6/120 and 10/120 was 41%, 48%, 59% and 77% of VO₂ max, respectively. The caloric cost per minute based on the mean weight of 62.8 kg for 0/120, 0/144, 6/120 and 10/120 was approximately 5, 6, 7 and 9 Kca/min, respectively. The caloric cost for “Wide” step, “Knee lift” and “Lunges” was approximately 7, 7 and 8 Kcal/min, respectively. The metabolic demand of the movement patterns and step height/cadence condition of 6/120 and 10/120 used in this study were shown to be of a magnitude that would meet the ACSM guidelines for cardiovascular fitness and/or weight loss once extrapolated for the duration of a typical step class.

Belford, Michele L. *Energy expenditure of step training vs. low impact aerobics using three common movement patterns, 1995.* M.S., Purdue University (Darlene A. Sedlock). (61pp 1f $4.00) PH 1485

The results of the study suggest that body composition among athletic teams varies, which may be a result of the unique training techniques and expertise required for different sports. Further research should involve the evaluation of body composition and its relation to athletes and their performance.
This study evaluated exercise on the StairMaster 4000PT (SM) with the addition of upper-body exercise using the UB Sport Trainer (UBST). Twenty-two females (age 19-35) volunteered as subjects. Each subject completed 2 exercise trials of 4, 5-minute workloads at workrates 3, 5, 7, and 9 on the SM. Arm exercise, set at a constant level of 6 on the UBST, was added to 2 alternating workrates on the first session and the other 2 on the second session. Subjects stepped in time with a metronome set at 48, 69, 88, and 108 steps per minute (spm), respectively. During all exercise sessions heart rate (HR) and rating of perceived exertion (RPE) were recorded, linear displacement of the pedals was videotaped, and expired air was analyzed using an open-circuit gas system. There were significant (p<.05) differences between arms and no arms (arms > no arms) for VO2, (L-min^-1, ml-kg^-1-min^-1) and METs at workrates 3 and 7, and for HR and RPE at workrate 3. There were no significant (p<.05) differences between arms and no arms on any variable for workrates 5 and 9, or at any workrate for RER, VE, and displacement. Possible explanations for these inconsistent results are that the UBST provided support for the subjects’ weight much like the side rails demonstrated in previous research. Another factor may have been the lack of training experience on the UBST leading to an inefficient and inconsistent pulling technique on the arm exercise device.


Seven active males, aged 22 through 40, with spinal cord injuries ranging from the seventh cervical vertebrae to the twelfth thoracic vertebrae, participated in an investigation to (a) determine ventilatory and lactate thresholds, and (b) establish the relationship between the two measures. The lactate threshold (T_LAC) was determined by blood sampling from a forearm vein during an incremental, arm ergometry exercise test. Gas collection and analysis was conducted during the same exercise test to determine the ventilatory threshold (T_VENT). Visual inspection was utilized to determine each threshold. For T_LAC the criterion was a non linear increase in venous lactate concentration. For T_VENT, a non-linear increase in the ventilatory equivalent of oxygen (V_e/VO2) without a corresponding increase in the ventilatory equivalent of carbon dioxide (V_e/VCO2) was the criterion. T_LAC and T_VENT were identified for each subject by 3 independent observers. Interobserver agreement for evaluators 1 and 2 was 57% for T_LAC and 100% for T_VENT. However, in case of disagreement, a third evaluator was consulted. Upon independent determination, evaluator 3 concurred with the primary investigator for a total interobserver agreement of 71% for T_LAC. In all cases, a minimum of 2 evaluators were in agreement in the determination of each threshold measure. T_LAC was detected for five subjects, and T_VENT was identified for three. Among those subjects for whom both thresholds were detected (n=3), the mean T_LAC, expressed as a percentage of VO2pk, was 74.0±7.9 (mean±SD). The subjects exhibited a mean T_VENT of 73.3±8.5 (mean±SD). With the small number of subjects and the poor rate of threshold determination among these subjects, the results must be interpreted with caution. However, there was some evidence to suggest that T_VENT and T_LAC signal the process of anaerobiosis in these individuals with spinal cord injuries.

Brady, Christine P. Effects of acute resistive exercise on the resting metabolic rate of women, 1996. M.Ed., Temple University (Zebulon V. Kendrick). (92pp $4.00) PH 1488

The purpose of this study was to determine the effect of acute resistive exercise on the resting metabolic rate of women. Eleven female subjects volunteered to participate in the study. Subjects completed two treatment conditions: nonexercise and resistive exercise. The treatment conditions were randomly ordered, and data were collected for 3 consecutive days (Day 1, Day 2, Day 3) during the nonfollicular stage for two separate menstrual cycles. A 2x3 analysis of variance (ANOVA) with repeated measures for two levels of condition (nonexercise and exercise) and three levels of time (Day 1, Day 2, Day 3) was performed for resting metabolic rate. A 2x4 ANOVA with repeated measures for two levels of condition (nonexercise and exercise) and four levels of time (immediately after determination of the resting metabolic rate, immediately following resistive exercise or 45 minutes of rest on Day 2 and 3) was performed for perceived muscle soreness and pain of the quadriceps, biceps, and pectoralis muscle groups. The probability for statistical significance was established at p<.05. Significant increases in resting metabolic rate from the nonexercise condition on Day 2 (2.7%) and Day 3 (3.7%) were found following resistive exercise. Differences in resting metabolic rate from Day 1 to 2 and Day 1 to 3 when normalized for body mass and lean body mass were significantly increased for the exercise condition only. Perceived pain assessed visually significantly increased immediately following the resistive exercise with further significant increases on Day 2 and 3. Punctate tenderness significantly increased immediately following resistive exercise for all three muscle groups on Day 1. Significant increases in punctate tenderness values were observed on Days 2 and 3 when compared to 45-minute values for the biceps and pectoralis muscle tendons. It was concluded that an acute episode of resistive exercise will increase the resting metabolic rate of women. The increase in resting metabolic rate was associated with delayed onset muscle soreness and pain.

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MST was lower for the SS condition versus NSS over all 12 time measurements. In addition, results show a significant difference in the core to skin temperature gradient ($P=.001$), with a greater gradient existing in the SS condition. There does not appear to be any effect of sunscreen on ventilation, rectal temperature ($T_r$), oxygen consumption, lactate levels, sweat loss, percent plasma volume change, rating of perceived exertion, or respiratory exchange ratio. Interestingly, although not statistically significant ($P=.18$), $T_r$ remained lower, on average .084°C, under the SS condition for every measurement throughout the exercise session. Differences in MST and $T_r$ were greatest at the beginning of the trial. In conclusion, results of this preliminary study suggest that an application of sunscreen may enhance heat dissipation as indicated by a decreased MST and increased core to skin thermal gradient.


The purpose of this study was to compare the levels of bone mineral density (BMD) of the whole body (WB) and proximal femurs of physically active men with spinal cord injuries (SCI) to nonactive men with spinal cord injuries. Also, the lean muscle mass (LMM) of active men with SCI was compared to the LMM of nonactive men with SCI. In addition, BMD values of the radii of physically active men with SCI were compared to that of able bodied men of the same age. The subjects N=46 were between the age of 20-55 ($\mu=37.83\pm6.63$ years), and were at least 2 years post spinal cord injury. Subjects with SCI were matched on similar level of lesion of the spinal cord, age, height, weight, and years post injury for the purpose of analyzing data. There were 14 active men with paraplegia and 14 nonactive men with paraplegia, 9 active men with quadriplegia and 9 nonactive men with quadriplegia. All BMD data was obtained utilizing a Hologic QDR 1000/W dual energy x-ray absorptiometer. A two-factor (level by group) analysis of variance revealed no significant difference for all sites (Whole body. Total hip. radii, LMM) comparing the active and nonactive men with SCI. T-scores and z-scores generated from the Hologic QDR 1000/W were analyzed using two-factor ANOVA (level by group). The active men with paraplegia had significantly higher BMD levels for all sites when compared to the other groups. These values may be explained by the number of incomplete injuries in the experimental group. Subjects in the physically active group did not clearly show a statistically significant difference on any of the dependent measures. However, values for the dependent measures were higher for the physically active group compared to the values of the nonactive group.
In 1994, Oldridge stated that cardiac rehabilitation is currently in a state of accountability. This study sought to perform an "up to date" evaluation of continuous electrocardiogram monitoring (CECGM) in terms of frequency of use, guidelines for use and termination, cost per monitored session versus discontinuously monitored (DECGM) programs, the need for CECGM, equipment cost, and reimbursement costs. Responses of 219 randomly selected Phase II programs provided data for analysis. Based on mean values, CECGM programs cost $23.50 more per session per patient than DECGM programs. American Association of Cardiovascular and Pulmonary Rehabilitation guidelines for high risk patients were most often used in determining candidates for CECGM. Clinical stability was most often used for termination of CECGM. In DECGM programs, signs and symptoms were the most frequently used methods of monitoring. The majority of programs using CECGM felt it was essential to ensuring patient safety whereas the majority of DECGM programs did not. A similar trend was seen for psychological dependence on CECGM. Staffing, not CECGM, was found to be the single greatest annual cost to a Phase II program. Medicare was found to be the predominant third party payer. The implications of these findings were discussed.


Increasing the body's buffering capacity by increasing blood HCO3 levels through administration of alkaline agents has been shown to enhance exercise performance of short duration (1-7 minutes). In an attempt to study the effect of sodium citrate, an alkaline agent, on 1600 meter running performance, 9 trained subjects (mean VO2max 62.52±4.82ml·kg-1·min-1; mean age 26.2±4.9 yrs.) ingested an average of 30.8±5.2 grams of sodium citrate approximately 1.5 hours prior to running. In the treatment condition, subjects ingested .5g/kg body weight of sodium citrate. In the placebo condition, subjects ingested calcium carbonate at a dose that was similar to the amount of sodium citrate capsules. Subjects also underwent a control condition. Ingestion of sodium citrate did not result in enhanced performance times (p>0.05) for the 1600 meter race. Mean times for the three conditions were (in sec), 324.80 for the control, 324.96 for the placebo, and 323.17 for the citrate condition. Acid-base level measurements showed a significant between treatment difference for the citrate condition, for pre and post-race blood HCO3- and blood pH, compared to the control and placebo conditions (p<0.05). Lactate levels were not significantly different across the three conditions (p<0.05), but were significantly elevated post-race in all conditions.

Haug, Rhea C. *Development and validation of a maximal testing protocol for the NordicTrack cross-country ski simulator*, 1995. M.S., University of Wisconsin-La Crosse (John P. Porcari). (37pp 1f $4.00) PH 1495

The purpose of this study was to develop a valid VO2max testing protocol for the NordicTrack (NT) cross-country ski simulator. To be considered a valid protocol, the maximal values obtained from the cross-country skiing (XC) test had to be similar to those obtained from a maximal graded treadmill (TM) test. During pilot testing (n=3), cadence
(strides/min), arm resistance, leg resistance, and grade were individually manipulated to study the effect on measured VO2. It was found that the greatest benefit in terms of increasing VO2 during XC skiing can be realized by increasing the frequency of limb movement rather than arm and leg resistance. A protocol for the NT was developed from the findings of the pilot study and was compared to a TM VO2max test utilizing the Bruce protocol. Thirteen male and 15 female volunteers (aged 22-49) served as subjects and completed both tests in random order. The maximal physiological responses from the XC and TM max tests were compared using paired t-tests. There were no significant (p>0.05) differences in maximal VO2 (42.5 vs 42.6ml·kg⁻¹·min⁻¹; 3.27 vs 3.31l·min⁻¹), HR (185 vs 185bpm), and RPE (19.0 vs 19.1) for the XC and TM tests, respectively. There were significant (p<0.05) differences for VE (124.5 versus 118.6l·min⁻¹) and RER (1.15 vs 1.21) between the XC and TM tests, respectively. It was concluded that the testing protocol for the NT XC simulator is valid and can be expected to elicit similar maximal values when compared to TM testing.

Hilbert, Carey A. Comparison of resting metabolic rate and excess post-exercise oxygen consumption in normal and low caloric dieting females, 1995. M.S., Oregon State University (Anthony R. Wilcox). (107pp 2f $8.00) PH 1496

There is a substantial body of evidence which supports the finding that caloric restriction results in a lowering of resting metabolic rate (RMR). Conflicting findings have been reported on the impact aerobic exercise may have in negating or even reversing this decline. It is widely believed that a combination of caloric deficit and exercise will accelerate weight/fat loss and prevent the decline of RMR. Some investigations, however, suggest that the effects of severe caloric restriction in tandem with moderate amounts of aerobic exercise may exacerbate the decline in RMR. The purpose of this study was to compare the resting metabolic rate and excess post-exercise oxygen consumption (EPOC) in active, normal calorie (NC) and low calorie (LC) dieting females. Fifteen females between the ages of 18 and 25 were selected through their responses to questionnaires on diet and exercise habits, and were assigned to one of two groups based on their average daily consumption (EPOC) in active, normal calorie (NC) and low calorie dieting females, with the NC group demonstrating a slightly greater absolute elevation in the last five minutes (21±0.2 vs 19±0.3 L·min⁻¹). Based on the results of this study, it would appear that the level of caloric intake did not affect RMR or the magnitude of EPOC.

Huenerbein, Heidi A. Guidelines for prescribing upper body exercise following open heart surgery, 1995. M.S., University of Wisconsin-La Crosse (John P. Porcari). (41pp 1f $4.00) PH 1497

This study determined current-practices in prescribing upper body stretching, aerobic, and resistance training exercises for patients following open heart surgery. Data were obtained through the use of questionnaires with 20 cardiac rehabilitation directors, 84 cardiac rehabilitation participants, and 10 cardiac surgeons in Wisconsin. Guidelines based on the average responses suggest that open heart surgery patients begin upper body stretching exercises 9 days, enter Phase II cardiac rehabilitation 18 days, begin resistance training 24 days, perform arm ergometry 25 days, use the Airdyne at 28 days, and use the rowing machine 45 days postprocedure. Guidelines were most often set by a registered nurse (35%), exercise specialist (22%), or a cardiac surgeon (20%). Typically, guidelines were determined by the patient’s comfort level based on sternal healing, exercise tolerance, and their heart rate and blood pressure responses. The majority of participants perceived the exercises prescribed for them to be appropriate and few experienced pain or problems during activity. These results indicate that the guidelines suggested by the professionals in the field of cardiac rehabilitation, although variable, appear to meet the needs of cardiac patients.

Johnston, David L. The effects of functional isometric weight training in conjunction with dynamic weight training on two bench press measurement tests, 1995. M.S., University of Wisconsin-La Crosse (Richard L. Pein). (99pp 2f $8.00) PH 1498

The purpose of this research was to determine the difference between dynamic resistance exercises and isometrics, and dynamic resistance exercises only on two bench press tests. The experimental groups’ (dynamic and isometric) test results were compared to the dynamic weight training
group. Two measurement tests for the bench press used were the traditional touch and go bench press test and the dead stop and press test. Both tests were done at 1-RM for a pre- and posttest. Twenty-four college males between 18-30 years of age volunteered to participate. After both tests were completed for the pretest, the subjects lifted for a 10 week training cycle. The data from these measurement tests were analyzed with a MANOVA. Both training groups’ pre- and posttest measurement scores were analyzed to observe any difference in strength gains between the two groups. The experimental group had a significant (p<0.05) improvement in strength gain for both bench press measurements compared to the group that used traditional weight training methods.

Lama, Iris L. Pulmonary diffusing capacity and exercise-induced hypoxemia in highly trained athletes, 1996. M.S., University of British Columbia (Donald C. McKenzie). (93pp 1f $4.00) PH 1499

The purpose of this study was to determine whether a reduced post-exercise pulmonary diffusing capacity (DL) had a physiological effect on subsequent exercise. Thirteen endurance-trained male athletes (age=27±3 yrs; ht=179.6±5.0 cm; mass=71.8±6.9 kg; VO2max=67.0±3.6 ml·kg⁻¹·min⁻¹) performed two consecutive VO2max exercise tests, separated by 60 min of recovery. Testing was on an electronically braked cycle ergometer (Quinton, Excalibur) using a ramp protocol (30 W min⁻¹). Arterial oxygen saturation (%SaO₂) was measured via ear oximetry (Ohmeda Biox 3740 pulse oximeter), and resting Dl was measured by a single-breath carbon monoxide diffusing capacity test (Collins Survey Tach Pulmonary Function Testing Unit), prior to exercise and 60 min following each exercise bout. In order to partition the membrane diffusing capacity (Dm) and pulmonary capillary volume (Vc) from Dl, two test gases were used (21% O₂ and 90% O₂ with 0.3% CO). Athletes that exhibited a decrease in %SaO₂ during exercise were grouped as desaturaters (D) all others were grouped as nondesaturaters (ND). There was a significant difference in %SaO₂ between D and ND (P=0.0001); however, all other measures between the two groups were not significantly different. There were no significant differences in VO2 max or %SaO2 min between exercise bouts. A 1.7% decrease (p=0.003) in peak power output occurred during the second exercise test (Ex2). Significant decreases occurred in Dl (P<0.0001), Dm (P=0.02) and Vc (p=0.0001) post-exercise, as compared to pre-exercise. Dl decreased 11% following the initial exercise bout (p<0.05) and a further 6% (p<0.05) from post-exercise 1 (Ex1) to post-Ex2. Similarly, Vc showed an overall decrease of 20% with a 10% decrease (p<0.05) between exercise bouts. Dm showed a significant (p<0.05) 11% decrease from pre-exercise to post-Ex1 and a further 2% decrease (p<0.05) between post-Ex1 and post-Ex2. A strong positive linear relationship existed in D between changes in %SaO₂ and changes in Dl (r=0.87, p=0.03), and between changes in %SaO₂ and changes in Dm (r=0.85, p=0.03) consequent to Ex1. No linear relationship existed for changes in D during Ex2 or during either exercise bout for ND. Rapid shallow breathing (RSB) was observed during recovery (R) following both exercise bouts. No significant differences in breathing pattern existed between Ex1-R1 and Ex2-R2, or between D and ND. The development of RSB and decreases in Dm following exercise support the presence of pulmonary edema. Because no further changes were observed following the second exercise bout and no differences existed between D and ND, alternate mechanisms in addition to diffusion limitations, must contribute to the final decrease in %SaO₂.

Lebzelter, Joseph. Cardiopulmonary responses to unsupported and supported arm exercise in normal subjects and patients with obstructive pulmonary disease, 1996. Ph.D., Temple University (Zebulon V. Kendrick). (209pp 3f $12.00) PH 1500

The purpose of this study was to compare the cardiopulmonary responses to unsupported arm exercise (UAE) and supported arm exercise (SAE) in clinically normal subjects and patients with chronic obstructive pulmonary disease (COPD). Clinically normal subjects (N=11) and patients with COPD (N=9) underwent clinical screening and pulmonary function and anthropometric assessments. Subjects performed two different arm exercise protocols: UAE using an interactive baton-hoop device and SAE using a conventional arm ergometer and unsupported arm exercise. Cardiopulmonary (i.e., spirometric measures, oxygen uptake, heart rate, and blood pressure) and cardiac hemodynamics (two dimensional and Doppler echocardiography) were obtained prior to and immediately following each exercise protocol. Resting clinical profiles, patients with COPD were found to exhibit a significant (unpaired t-test) airway obstruction consistent with emphysema, depressed duty cycle, oxygen saturation, and oxygen pulse, lower stroke volume and end diastolic volume, and a greater heart rate than clinically normal subjects. A 2X3 ANOVA with 2 levels of disease status and with repeated measures for 3 levels of exercise (rest, UAE, and SAE) was performed on all dependent variables. When significant differences (p<.05) occurred, a Tukey post-hoc test was utilized to locate the differences. Clinically normal subjects exercised longer during SAE and UAE than patients with COPD. At volitional fatigue both groups of subjects had similar rates of perceived exertion for their exercise protocol. Both UAE and SAE significantly increased cardiopulmonary and cardiac hemodynamic responses in all subjects with clinically normal subjects displaying greater augmentation than patients with COPD during SAE for: oxygen pulse (10.5±2.4 vs. 6.6±1.2 mL/beat), heart rate (151.4±12.8 vs. 121.0±7.4 beats/min), minute ventilation (66.5±18.0 vs. 32.6±7.8 L/min), stroke volume (104±20 vs. 60±11 mL), cardiac output (15.9±3.9 vs.
In previous work an acute dose of cocaine increased muscle glycogenolysis, produced elevated blood lactate, and raised plasma catecholamines and corticosterone levels during exercise. The purpose of the present work was to study the effects of cocaine-exercise on insulin and glucagon. Rats were rested or run for 30 min (26 m/min, 10% grade) following intravenous saline or cocaine (1 mg/kg or 5 mg/kg) injection. Aortic blood and liver samples were analyzed. No effect of cocaine on either glucagon or insulin was observed at rest or exercise. Blood glucose and liver glycogen also showed no statistical changes. Blood lactate rose with exercise in all the exercise groups and showed a greater tendency to rise in the cocaine treated animals. This concurs with previous findings of this laboratory wherein lactate increases additively with cocaine. We conclude that cocaine does not affect liver carbohydrate metabolism nor does it affect the regulatory hormones glucagon and insulin at rest or exercise.

Key Words: Cocaine and lactate, Cocaine and glucose, Cocaine and glycogen

Dietary supplementation has become prevalent among exercising populations in recent years (Sobal & Marquart, 1993). Chromium picolinate and l-carnitine are two nutrient complexes which have received significant attention for their theorized ability to promote anabolism and improve cardiovascular endurance, respectively. Chromium picolinate and l-carnitine formulations are currently being marketed as agents capable of enhancing body composition and performance, despite the absence of research investigating their safety and efficacy. The purpose of this study was to examine the effects of METABOTRIM™, a nutrient formulation containing both chromium picolinate and l-carnitine, to determine whether it had any impact on body composition, strength or maximal oxygen uptake in training female athletes compared to a placebo treatment. Twelve female collegiate athletes participated in the study. Subjects completed informed consent forms prior to participation. Before, and immediately following an eight week supplementation and training program, subjects underwent extensive testing.

Two dietary programs on women’s body composition, caloric intake, dietary composition, and subjective feelings concerning the programs, 1995. M.S., Brigham Young University (Philip E. Allsen). (102pp 2f $8.00) PH 1503

This study determined the effect of dietary education, exercise, and two dietary programs on women’s body composition, caloric intake, dietary composition and subjective feelings concerning the programs. Thirty-four females (18-45) with a body fat of 30+ % were randomly assigned, in a double-blind fashion, to either the supplement or placebo group. For eight weeks all subjects participated in an off-season training program involving weight lifting three days per week and endurance training three days per week. The weight lifting program had a strength-building emphasis and the principle of progressive overload was employed. Endurance training involved two mile runs and various combinations of short and long sprints. Separate repeated measures ANOVAs revealed that there were no significant changes in any of the body composition measures during the study. Both groups improved significantly in strength as a result of training. Significant main effects for time were found for bench press, leg extension and sum of strength. No interactions were observed for any of the strength variables. No significant changes in V02max occurred in either group. The present study did not control for dietary intake. Baseline nutrient status and urinary excretion levels of the supplemented nutrients were not measured. In addition, the small sample size reduced statistical power. Length of the training and supplementation period may also have been insufficient. The results of the present study suggest that METABOTRIM™ was ineffective in eliciting changes in body composition, strength or endurance over an eight-week period in training female athletes.

Murray, Teena. Evaluation of METABOTRIM™ supplementation of body composition, strength and V02max in training female athletes, 1996. M.S., University of North Carolina at Greensboro (Regina Hopewell). (85pp 1f $4.00) PH 1502

Dietary supplementation has become prevalent among exercising populations in recent years (Sobal & Marquart, 1993). Chromium picolinate and l-carnitine are two nutrient complexes which have received significant attention for their theorized ability to promote anabolism and improve cardiovascular endurance, respectively. Chromium picolinate and l-carnitine formulations are currently being marketed as agents capable of enhancing body composition and performance, despite the absence of research investigating their safety and efficacy. The purpose of this study was to examine the effects of METABOTRIM™, a nutrient formulation containing both chromium picolinate and l-carnitine, to determine whether it had any impact on body composition, strength or maximal oxygen uptake in training female athletes compared to a placebo treatment. Twelve female collegiate athletes participated in the study. Subjects completed informed consent forms prior to participation. Before, and immediately following an eight week supplementation and training program, subjects underwent extensive testing.


In previous work an acute dose of cocaine increased muscle glycogenolysis, produced elevated blood lactate, and raised plasma catecholamines and corticosterone levels during exercise. The purpose of the present work was to study the effects of cocaine-exercise on insulin and glucagon. Rats were rested or run for 30 min (26 m/min, 10% grade) following intravenous saline or cocaine (1 mg/kg or 5 mg/kg) injection. Aortic blood and liver samples were analyzed. No effect of cocaine on either glucagon or insulin was observed at rest or exercise. Blood glucose and liver glycogen also showed no statistical changes. Blood lactate rose with exercise in all the exercise groups and showed a greater tendency to rise in the cocaine treated animals. This concurs with previous findings of this laboratory wherein lactate increases additively with cocaine. We conclude that cocaine does not affect liver carbohydrate metabolism nor does it affect the regulatory hormones glucagon and insulin at rest or exercise.

Key Words: Cocaine and lactate, Cocaine and glucose, Cocaine and glycogen

Body composition evaluations included 7-site skinfold measurement, 9-site circumference measurement, hydrostatic weighing and body mass. Muscular strength was measured using one repetition maximum (1-RM) strength tests for bench press, leg extension and leg flexion. Graded treadmill exercise tests were used to determine maximal oxygen uptake (V02max). Subjects were pair-matched on initial body fat levels and were randomly assigned, in a double-blind fashion, to either the supplement or placebo group. For eight weeks all subjects participated in an off-season training program involving weight lifting three days per week and endurance training three days per week. The weight lifting program had a strength-building emphasis and the principle of progressive overload was employed. Endurance training involved two mile runs and various combinations of short and long sprints. Separate repeated measures ANOVAs revealed that there were no significant changes in any of the body composition measures during the study. Both groups improved significantly in strength as a result of training. Significant main effects for time were found for bench press, leg extension and sum of strength. No interactions were observed for any of the strength variables. No significant changes in V02max occurred in either group. The present study did not control for dietary intake. Baseline nutrient status and urinary excretion levels of the supplemented nutrients were not measured. In addition, the small sample size reduced statistical power. Length of the training and supplementation period may also have been insufficient. The results of the present study suggest that METABOTRIM™ was ineffective in eliciting changes in body composition, strength or endurance over an eight-week period in training female athletes.
consumption of complex carbohydrate. Both groups had positive feelings concerning the programs, but only the SDA / FC group indicated they could engage in their program for extended periods of time, such as 5+ years. It was concluded that both programs can reduce body fat, and caloric intake and affect dietary composition, and consideration should be given to the SDA / FC program when people desire a long-term program.


It is well established in athletic adult individuals that specialization to an aerobic or anaerobic phenotype can occur. Less is known about this specialization in children. While childhood participation in organized sports is increasing, still very little is known about the physiological potential of young athletes. For example, the development of the aerobic and anaerobic energy systems in relation to each other in children is not well known. Many children are being put on training programs before puberty without any knowledge as to whether or not this can influence specialization to an aerobic or anaerobic phenotype. Early authors basing their results on twin studies, suggested a strong genetic component to aerobic or anaerobic phenotypes (Klissouras et al., 1973). This was not confirmed by muscle biopsy studies in children (Bell et al., 1980) and in fact Bouchard et al. (1992) have proposed a strong environmental or training influence to athletic performance. The purpose of this study was to look at the question of metabolic specialization in pre pubertal children before they had any influence of growth or maturation or training effects. The hypothesis was that if specialization exists, then those children with the better anaerobic capacity would have the lower aerobic capacity and vice versa. An attempt was made to screen out the better sprint and endurance performers with field tests, as it was felt that if specialization was occurring it would most likely be present in this group of individuals. A total of 42 pre-pubertal children from one school completed the study. Mean age was 9.31 years (range 8-11 years). All children initially completed field tests of 50 yard run and 1600 yard run to determine the best sprint and endurance performers. The sprint group (S) performed the 50 yard run under 8.50 seconds, while the endurance group (E) ran 1600 yards under 8 minutes. A questionnaire was filled out to exclude subjects who were involved with a track club or regular training program. On a separate day laboratory tests and anthropometric measures were performed. The laboratory tests performed in random order consisted of a Wingate protocol for anaerobic parameters on one day and a Quinton cycle ergometer for aerobic parameters on another day. Statistical analysis consisted of a zero order correlational analysis for the dependent variables of age, sex, height, weight, sum of skinfolds, sprint run time, endurance run time, anaerobic capacity, peak and mean anaerobic power, and aerobic capacity. In addition a Hotelling’s T² test was performed to determine significant differences between the sprint and endurance groups. The results showed no significant differences between sprint or endurance groups with respect to anthropometric or laboratory measures. There was a trend for the sprint group to have higher peak anaerobic power 9.43 ± 0.87 W / kg (S) versus 8.67 ± 1.25 W/kg (E). However, they also showed a trend towards higher aerobic power 52.03 ± 7.97 ml/kg/min (S) versus 47.73 ± 9.25 ml/kg/min (E). This suggests no specialization. In addition the correlational analysis showed high positive correlations between mean anaerobic power and VO₂max (r = 0.88) and peak anaerobic power and VO₂max (r = 0.82) suggesting that those children who do best aerobically also do best anaerobically in the pre-pubertal age group. The evidence provided from this study suggests that pre-pubertal children are metabolic non-specialists. Therefore rigorous training programs trying to implement aerobic or anaerobic specialization in this age group are likely not beneficial. The specialization seen in adolescents and adults may be secondary to growth or maturational changes after puberty and this would most likely be the better stage to begin regular training programs in children.


Physical activity has been shown to augment bone mineral; however, in some female athletes, extremely intense training may result in menstrual cycle irregularities, leading to bone loss. Forty-four women (aged 20±2.1 years, mean±S.D.) completed the 8-month study: 12 gymnasts (G), 18 runners (R) and 14 controls (C). Approximately one third of each athletic group exhibited amenorrhea and oligomenorrhea; all control subjects were eumenorrheic. The gymnasts had a significantly later age at menarche (16.0±1.5 yr) compared to the runners (14.1±1.4 yr) and controls (13.0±1.2 yr). Bone mineral density (BMD) at the lumbar spine (LS) (R>G,C), femoral neck (FN) (G>C>R) and whole body (WB) (G>R) were significantly different (p<0.05) among the groups at baseline. Percent change scores for BMD were as follows: G>C,R for % change in LS BMD and FN BMD; the % change in WB BMD did not differ among groups. The 2.9±2.5% change in LS BMD in the gymnasts was significantly different from zero, as was the 0.7±1.3% change in LS BMD in the controls. The 1.9±1.6% and 1.4±0.7% change in WB BMD in the runners and gymnasts (respectively) were both significantly different from zero. Menstrual cycle status had a significant effect on % change in BMD which varied depending on skeletal site and athletic group. The %
change in LS BMD in the eumenorrheic runners (ER) was significantly different compared to the oligo/amenorrheic runners (OAR): 1.0±2.1% and -0.9±1.5%, respectively. The % change in LS BMD in the eumenorrheic gymnasts (EG) was significantly greater compared to the eumenorrheic controls (EC): 3.6±2.0% and 0.7±1.3%, respectively. The % change in FN BMD was significantly different in the EG (2.7±2.8%) compared to the ER (-1.3±2.6%) and EC (-0.9±2.2%). The % change in WB BMD did not differ among the groups by menstrual cycle status. There was a tendency (non-significant due to small sample sizes) for asymptomatic eumenorrheic control subjects and gymnasts (at the LS only) with a shortened luteal phase or anovulatory cycle to exhibit less of an increase or even a decrease in BMD over time compared to normal eumenorrheic gymnasts and controls. The gymnasts had significantly greater dietary calcium:phosphorus and calcium:protein ratios compared to the runners and controls. It is hypothesized that higher impact loads on the skeleton from gymnastics training and greater calcium availability among gymnasts accounted for higher initial BMD in gymnasts and may partially explain why the gymnasts tended to improve BMD over time. Additionally, estrogen status appears to potentiate the effect of exercise on bone mineral accretion, particularly at the lumbar spine.

Seo, Chungjin. Effects of ethanol on thermoregulatory responses during cold air exposure in male and female subjects, 1996. Ph.D., Temple University (Albert M. Paolone). (194pp 2f $8.00) PH 1506

The purpose of this study was to determine the effects of ethanol on the thermoregulatory responses during 60 minutes of cold air exposure and 15 minutes of recovery in both male and female subjects, and whether gender differences exist in these responses. Six male and 6 female subjects ranging in age from 20 to 29 years were exposed to four conditions for 60 minutes: (a) neutral/placebo (25°C), (b) neutral/ethanol, (c) cold/placebo (5°C), and (d) cold/ethanol. The ethanol dose was normalized for body weight (2 ml/kg) and administered with orange juice for a final volume of 8 oz. Ethanol in orange juice or orange juice only was orally ingested in two doses of equal volume. Rectal temperature, mean skin temperature, mean body temperature, heat storage, skin blood flow, heart rate, oxygen consumption, and shivering were collected at baseline 1 (following instrumentation of subjects), baseline 2 (20 minutes following ethanol administration), at 15, 30, 45, and 60 minutes of exposure to the neutral or cold environment, and 15 minutes of recovery. During each condition the relative humidity ranged between 50 and 60%. To determine the effect of ethanol and gender on a cold air exposure ANOVA statistical analyses were used for the factors of gender (male and female), environment (neutral and cold), treatment (placebo and ethanol), and time (baseline 1, baseline 2, average between 0 and 30 minutes of exposure, average between 30 and 60 minutes of exposure, and 15 minutes of recovery) with repeated measures across all factors except gender. Rectal temperature, mean skin temperature, mean body temperature, heat storage, skin blood flow, heart rate, and oxygen consumption were analyzed. Shivering data were analyzed using a 2x2x4 ANOVA with repeated measures across all factors except gender with the factors being gender (male and female), treatment (placebo and ethanol), and time (15, 30, 45, and 60 minutes). When significant differences were found, a Newman-Keuls post-hoc test was used to identify significant differences. Significance was determined at a p<.05. The major finding of this study was that male subjects had a greater heat deficit in the cold exposure than female subjects. The factors which contributed to greater heat loss in male subjects were their greater body surface area, increased shivering, and consequent larger convective heat loss. Male subjects demonstrated greater decreases in mean skin temperature and mean body temperature in the cold environment than female subjects while female subjects had a greater elevation in oxygen consumption than male subjects in the cold environment. Male subjects also showed greater shivering compared to the female subjects in the cold. There were no cases in which alcohol interacted with gender to effect differences in thermoregulatory responses. The only effects of alcohol intake on the parameters measured were for skin blood flow, oxygen consumption, and shivering. Skin blood flow was increased from baseline during the neutral/ethanol condition; while alcohol suppressed increases in skin blood flow, oxygen consumption, and shivering during cold exposure. These effects of alcohol on responses to cold exposure were not different across gender.


Bone mass and falls are two determinants of fracture risk. The purpose of this study was determine if a 9-month resistance training intervention would decrease fracture risk and improve psychological variables in postmenopausal women. Participants (n=44, mean age~63y) were at least 5 years past menopause and community-dwelling. Dependent measures included bone mineral density (BMD), muscular strength and power, static and dynamic balance, self-concept, and global affect. Bone mass and body composition were assessed by dual energy x-ray absorptiometry (DXA, Hologic QDR-1000/W). Peak force was determined by isokinetic dynamometry (KinCom 500H) and muscular power by a modified Wingate anaerobic power test. The ProBalance Master (NeuroCom International, Inc.) was utilized to assess static and dynamic balance. Self-concept and affect were evaluated via the Physical Self-Perception Profile-A (PSPP-A) and
Positive and Negative Affect Schedule (PANAS), respectively. Subjects were assigned to either a control or exercise condition. Exercisers participated in weight-bearing, lower body training 3 times per week, in which resistance was added with a weighted vest. Controls were instructed to maintain customary activity and dietary habits. Strength, power, balance, and psychological measures were assessed at three-month intervals. Bone mass was determined at baseline, 6 and 9 months. At the conclusion of the intervention, exercisers exhibited significant (p=0.01-0.0001) improvements in leg power (13%) as well as in knee extensor (16.6%), hip abductor (30.3%), and ankle plantar flexor (33.3%) strength. The dynamic balance assessment indicated improved lateral postural stability in the exercisers. No improvements were noted for BMD, static balance, or psychological measures. Both groups maintained BMD the femoral neck and lumbar spine during the 9-month trial. In conclusion, a practical resistance training intervention may decrease fracture risk in healthy, older women, by improving leg strength, power, and dynamic postural stability.

Sierra, Nelson. Determining the validity and reliability of the Nicholas Manual Muscle Tester as a measure of isometric strength in women with arthritis, 1995. M.S., Oregon State University (Jeffery A. McCubbin). (83pp 1f $4.00) PH 1508

The purpose of this investigation was to determine the validity and reliability of the Nicholas Manual Muscle Tester (NMMT), a portable dynamometer, as a measure of the isometric strength in women with arthritis. Female subjects (N=13; 66 ± 13.89 yrs.) with arthritis were tested for isometric muscle strength on the shoulder and hip (abduction, adduction, flexion, extension). Subjects were tested on three separate days using NMMT and Kincom 500-H dynamometers. Each subject performed three maximal isometric contractions for each joint action. A visual analog pain scale was used to determine level of pain prior to testing. Reliability values based on intraclass correlations coefficients (R) ranged from .85 to .93, with the exception of shoulder abduction being .49. Validity was determined correlating the mean value of the NMMT score with corresponding Kincom isometric measure. Pearson product moment correlations ranged from (.02 to .86, with 4 of 8 values meeting .05 level of significance. Correlation coefficients for pain and isometric force values were inconclusive and ranged from .305 to .218. Major conclusions were: a) NMMT had high test-retest reliability in this sample; b) NMMT provides little criterion evidence of validity with the Kincom for most movements of hip and shoulder; c) level of pain was not a significant factor in subject reliability.

Slovak, John P. The utilization of the 225-test to predict one repetition maximum bench press with college football players, 1996. Ed.D., East Texas State University (Tom Ward). (89pp 1f $4.00) PH 1509

Purpose of the Study: The purposes of this study were to compare actual and predicted IRM by 225-test performance, to compare among actual IRM and established equations to predict IRM, and if necessary to develop an equation to predict IRM. Procedure: College football players performed both a one-repetition maximum bench press and the 225-test. Using the 225-test results, a predicted IRM was obtained from the Epley, Mayhew et al., and Brzycki equations. The subjects were grouped according to 225-test repetitions, duration of 225-test, and percentage of IRM that 225 pounds constitutes. A comparison was made of the predicted values and actual IRM. Results: The results of this study indicate high correlations between actual IRM and predicted values. The Epley equation did not differ according to grouping by 225-test repetitions, duration of 225-test, and percentage of IRM that 225 pounds constitutes. It was also determined that the predicted value of the Brzycki equation differed significantly from the actual IRM, Epley, and Mayhew et al. equations. Conclusions: The results of this study supported the following conclusions: 1. The prediction of one repetition maximum bench press in NCAA Division II college football players from the 225-test is possible using the Mayhew et al. and Epley equations. 2. The prediction of one repetition maximum bench press in NCAA Division II college football players can be determined using an equation; however, the Mayhew et al. and Epley equations are more accurate than the Bryzcki equation. 3. The accuracy of the Epley equation determined that no new equation to predict IRM bench press in NCAA Division II college football players was needed.

Springer, Judy B. Post running, post cycling, and post training running economy in duathletes, 1995. M.S.Ed., Northern Illinois University (Sharon Ann Plowman). (102pp 2f $8.00) PH 1510

The first purpose of this study was to compare the effects of a cycling bout on running economy with the effects of a running bout on running economy. Four males and four females (M age 28.25±2.2 years) took part in five testing sessions: (a) treadmill and cycling familiarization; (b) measurement of running economy at four speeds (228, 240, 252, and 266 m·min⁻¹) and running VO₂max (M=65.7±2.7 ml·kg⁻¹·min⁻¹); (c) remeasurement of running economy and cycling VO₂max (M=58.0±3.1 ml·kg⁻¹·min⁻¹); (d) 40 minutes cycling at 80% cycling VO₂max immediately followed by remeasurement of running economy (cycle-run); and (e) 40 minutes running at 80% running VO₂max immediately followed by remeasurement of running economy (run-run). A 3X4 repeated measures (RM) analysis of variance
(ANOVA) was used to compare running economy and lactate concentrations in the rested, cycle-run, and run-run conditions across speeds. When appropriate, Tukey post hoc comparisons were used. Running economy was significantly (p=.002) lower following both the cycling bout and running bout compared to the control condition [cycle-run difference=1.43 ml·kg⁻¹·min⁻¹; run-run difference=1.76 ml·kg⁻¹·min⁻¹] but these did not vary from each other. Lactate concentration did not vary across conditions. The second purpose of this study was to determine the effects of an eight-week training program that included transition training (one endurance and one interval sequential cycle-run session per week) on running economy. Three males and three females (M age 30.17±2.45 years) took part in sessions (b), (c), and (d) from above at four speeds (231, 243, 256, and 270 m·min⁻¹) pre- and post-training. Results from a 2X2 RM ANOVA showed that VO₂max did not change significantly (p=.073) in either modality from pre- to post-training (running, pre 68.2±2.8, post 69.4±1.8 ml·kg⁻¹·min⁻¹; cycling pre 60.9±3.3, post 66.6±3.9 ml·kg⁻¹·min⁻¹). Results from a 2X4 RM ANOVA indicated that running economy did not change significantly (p=.758) from pre- to post training in the control condition. Gain score analysis showed that running economy improved at post-training (p=.007) and the greatest improvement occurred at the first speed when compared to all other speeds (p=.000). Lactate concentrations were significantly (p=.002) higher pre- to post-training in the control condition but showed no significant difference in gain scores. It was concluded that running economy declines from control conditions whether the preceding exercise bout is running or cycling and that a cycle-run transition training program of individually constant training volume but increased duration and intensity can improve running economy after cycling.

Sundquist, Robert D. *The comparative effectiveness of static stretching and proprioceptive neuromuscular facilitation stretching techniques in increasing hip flexion range of motion*, 1996. M.S., Oregon State University (Rod A. Harter). (51pp 1f $4.00) PH 1511

The lack of hamstring muscle group flexibility has previously been associated with a higher incidence of hamstring strains among athletes. Several stretching methods have been shown to increase hip joint range of motion (ROM); however, identification of an optimal stretching method has proven difficult. The purpose of this study was to find an optimal method of stretching to improve hip flexion range of motion. Forty-three female college students, ranging in age from 18 to 29 yrs., volunteered to participate in this study. The subjects were randomly assigned to one of three stretching groups: static, contract relax, contract relax agonist contract. The subjects’ maximal passive and active hip flexion ROM values were measured using an inclinometer. The subjects were stretched by the same partners at a rate of six days a week for a total of 20 treatments over a 23 day period. The selected stretching techniques produced significant pretest to posttest increases (p<0.02) in both passive and active hip flexion ROM. None of the stretching techniques improved passive or active hip flexion ROM significantly more than the other. Static stretching increased passive hip flexion ROM an average of 23.3±13.3 deg, with the contract relax agonist contract technique producing an average increase of 17.6±14.1 deg, and the contract relax technique resulting in an average increase of 12.0±10.8 deg. A significant stretching technique x pretest/posttest interaction was found for the passive ROM values (p<.02). Scheffé post hoc analysis of simple interaction effects revealed that the static stretching technique improved posttest passive hip flexion ROM significantly more than the PNF contract relax stretching method (p<.05). The results suggest that all three stretching techniques selected for this study are effective in increasing hip flexion range of motion. Static stretching of the hamstring produced the greatest increases in both passive and active hip flexion ROM, but no optimal technique was identified.

Teo-Koh, Sock M. *Relationship between peak VO₂ and performance on the Rockport Fitness Walking Test of adolescent males with mental retardation*, 1995. Ph.D., Oregon State University (Jeffery A. McCubbin). (204pp 3f $12.00) PH 1512

The Rockport Fitness Walking Test, RFWT, has been recommended as a valid and reliable field test of cardiovascular fitness for adults with and without mental retardation (MR). The purpose of this study was to determine the relationship between peak oxygen consumption and RFWT performance of 12-17 year old males with MR. Reliability of RFWT performance and peak VO₂ was also evaluated. Forty subjects (mean age=14.13 years, mean IQ=50) were selected from two special schools in Singapore. A three-phase familiarization and practice process preceded testing. All subjects were tested twice on the RFWT. Of these 40 subjects 24 were tested twice on the graded maximal treadmill test (GMTT). Except for mean IQ, independent t-tests indicated no significant differences in age, weight and height of “RFWT only” and “RFWT & GMTT” subjects. Test-retest reliability of the RFWT was high for walk times, RFWT END-HRpeak and peak RFWT HR (r=0.90 to 0.97). Test-retest reliability of relative peak VO₂ was 0.90 (mean=41.28 ml·kg⁻¹·min⁻¹±6.43). Relative peak VO₂ correlated negatively and significantly with best walk time (r=-0.76). Correlation between absolute peak VO₂ and walk time was -0.58. Partial correlation analysis indicated that when weight and various combinations of variables with weight were held constant, the relationship between walk time and peak VO₂ was strengthened. Multiple regression analysis of RFWT performance variables and peak VO₂ measures indicated the best model...
for estimating relative peak VO₂ was: peak VO₂=95.56-3.345(walk time) -0.174(Wt). The SEE was 3.84 ml·kg⁻¹·min⁻¹ and adjusted R² was 0.64. The best model for estimating absolute peak VO₂ was: peak VO₂=2.90-0.176(walk time) +0.031(Wt). The SEE was 0.18 l·min⁻¹ and adjusted R² was 0.87. Results indicated the RFWT is a reliable field test for the sample tested. Reliable peak VO₂ measures can be obtained if consideration is given to providing sufficient familiarization and practice. Prediction equations developed in this study should be further tested and validated. Further studies with subjects of different age, gender and IQ levels need to be conducted to confirm the appropriateness of the RFWT as a valid cardiovascular field test for individuals with MR.

Trost, Stewart G. *The effect of substrate utilization, manipulated by nicotinic acid, on excess postexercise oxygen consumption*, 1994. M.S., Oregon State University (Anthony R. Wilcox). (106pp 2f $8.00) PH 1513

Increased fat oxidation during the recovery period from exercise is thought to be a contributing factor for the EPOC. In an attempt to study the effect of serum free fatty acid (FFA) availability during exercise and recovery on EPOC, nicotinic acid (NA), a potent inhibitor of FFA mobilization from adipose tissue, was administered to six trained male cyclists (VO₂max 65±8.5; age 25±4.6 y) prior to, during, and after a bout of cycling at 65% VO₂max. In the NA trial, a 500 mg dose of NA was ingested prior to exercise, and 100 mg doses were ingested at 15, 30, and 45 min exercise, and 30 min recovery. The cyclists also completed a trial under control (C) conditions. Serum FFA, serum glyceral, and VO₂ were monitored during rest, exercise, and recovery, each of which was 1h in duration. NA ingestion prevented the increase in serum FFA that occurred during exercise in the C trial; FFA levels were significantly lower than C values (p<.05) during both exercise and recovery in the NA trial. Serum glyceral levels were significantly lower (p<.05) during exercise in the NA trial. The respiratory exchange ratio (R) was not significantly lower during exercise. However, R was significantly lower, indicative of greater fat utilization, during recovery in the C trial (0.77 C, 0.83 NA) (p<.05). There was a tendency for VO₂ values to be greater in the C condition, but the difference in the 1h EPOC was not statistically significant (5.71±1.49 L C:4.46±2.5 L NA)(p=.23). While the expected shifts in substrate metabolism occurred following NA ingestion, the reductions in fat utilization during recovery did not significantly alter the EPOC.

Wallis, Jason D. *Acute effects of strength training on cardiorespiratory parameters during subsequent aerobic exercise*, 1995. M.S., Oregon State University (Anthony R. Wilcox). (77pp 1f $4.00) PH 1514

The purpose of this investigation was to determine the acute effects of strength training on various cardiovascular, ventilatory, and metabolic parameters during subsequent aerobic exercise. Six fitness enthusiasts, previously trained in weightlifting (WL) and cardiovascular conditioning, performed a weightlifting session consisting of three Universal equipment leg exercises (leg press, leg extension, leg curl). Immediately afterward, the subjects exercised on a cycle ergometer at 65% of their VO₂max for 30 minutes. Physiological parameters of heart rate (HR), oxygen consumption (VO₂), ventilation (Ve), respiratory exchange ratio (RER), and rating of perceived exertion (RPE) were measured during submaximal trials and compared to controls who performed cycle ergometry without a previous strength training session. An unpaired t-Test was employed to evaluate the influence of strength training on the various physiological parameters during submaximal aerobic exercise. Only heart rate changed significantly (p<.05) due to the intervention, whereas VO₂, Ve, RER, and RPE were unaffected by the strength training session. The mean difference between submaximal exercise trials for heart rate within the control group was -1.0 beats per minute, whereas the experimental group showed an increase of 8.83 bpm between trials (p = .0475). Therefore, if fitness enthusiasts are judging exercise intensity by HR alone, they will achieve a lesser training stimulus during the aerobic conditioning phase of cross-training. Those judging exercise intensity by a predetermined equipment setting will achieve a higher HR but probably not a greater training stimulus.


Power Poles are specially constructed, rubber-tipped walking poles designed to be incorporated during walking in order to mimic the arm action of cross-country skiing. This study compared the acute physiological responses of walking with and without Power Poles in 14 male Phase III/IV cardiac rehabilitation (CR) patients (M age=61.6yrs). Following instruction on the proper use of the poles and adequate time to practice, each subject completed two 8-minute walking trials on a level treadmill, once with and once without poles. Each trial was conducted at an identical speed for each subject in a randomized order. Heart rate, systolic blood pressure, diastolic blood pressure (DBP), ratings of perceived exertion, and ECG responses were recorded every 2 minutes. Oxygen consumption in ml/kg/min was measured continuously and recorded each minute. Results between trials were compared with paired t-tests. Calculated O₂ pulse (ml O₂/heart beat) values indicated that changes in cardiorespiratory parameters were commensurate with the increase in mass of exercising muscle associated with using the poles. There
was a significant increase in DBP (4mmHg); however, it is doubtful that the magnitude of this increase poses a threat to these patients. The only dysrhythmias noted were isolated PVCs with no differences between the trials. There was no significant ST depression for either trial. It appears that the use of Power Poles is a safe and effective method to increase the intensity of walking exercise in Phase III/IV CR patients.

HEALTH EDUCATION

Allen, Donna J. Coverage of the spiritual dimension of health in personal health textbooks in higher education, 1993. Ph.D., Texas Woman’s University (Judith A. Baker). (163pp 2f $8.00) HE 561

The purpose of this study was to explore the extent and coverage of the spiritual dimension of health in college level personal health textbooks published between 1961-1963, 1975-1977, and 1991-1993; and to compare the number of pages devoted to each of eight dimensions of health: spiritual, physical, social, emotional/mental, vocational, cultural, intellectual, and environmental. A total of 15 textbooks were reviewed for this study. A 56 item coding form administered to each textbook indicated that a significant amount of change in coverage of the spiritual dimension of health in personal health textbooks was found in (a) representation by index, (b) representation by definition, and (c) portions of the textbook devoted to information on stress. There has been a significant change in the coverage of the environmental dimension of health in college level personal health textbooks. No significant difference was found in coverage of the other dimensions examined. This content analysis provides extensive description of spiritual health in personal health textbooks and offers directions for the profession and future research.

Anderson, Paula J. University of Wisconsin-La Crosse Adult Fitness/Cardiac Rehabilitation graduate program assessment, 1995. M.S., University of Wisconsin-La Crosse (Philip K. Wilson). (97pp 1f $4.00) HE 562

A survey assessed the career paths of former University of Wisconsin-La Crosse Adult Fitness/Cardiac Rehabilitation (AF/CR) graduate program students (n=289) and evaluated the program itself. A 44% response rate was achieved. Thirty-one states and 2 foreign countries were represented by the respondents (n=126). Seventy-nine females (65.8%) and 41 males (34.2%) returned the survey. Mean age of the respondents was 34.7 ± 5.28. The American College of Sports Medicine and the American Association of Cardiovascular and Pulmonary Rehabilitation represented the greatest number of former students with 70% and 45% respectively. Approximately 28% pursued advanced degrees. Hospitals and clinics employed the majority (72.6%). It was found that exercise physiologist was the primary position/title (25.8%) with a mean annual income of between $30,000 to $34,999 (average work week of 47 hours). Salaries were also compared between geographical location, position, and number of years working. Job satisfaction was “good” among former students (44%). Overall experiences in the program were rated very rewarding (95.1%). Ninety-six percent of respondents indicated that they would recommend the program to others. Program assessment results will be used to implement possible modifications in the current AF/CR graduate program.

Bond, Carol. Practice and belief barriers to diabetes management in Cambodian non-insulin-dependent diabetes mellitus patients, 1995. M.S., Brigham Young University (Ronald L. Rhodes). (80pp 1f $4.00) HE 563

Objective: This study used focus groups to explore health practices and beliefs of Cambodian persons with non-insulin-dependent diabetes mellitus (NIDDM) that may act as barriers to the management of the disease. Research Design and Methods: Nineteen Cambodians participated in three focus group interviews conducted in Long Beach, California. Results: Consistent themes included a feeling of control over the disease, a cultural tendency to place responsibility for care upon family members, little understanding of pathophysiology of the disease, a lack of understanding and skills for appropriate food selection, barriers to receiving care due to language and transportation needs, and a lack of understanding of appropriate exercises for diabetics. Conclusions: Data from the focus groups provided useful information for planning innovative intervention programs for Cambodian diabetics that emphasize family education, practical skill development, and appropriate translation services.

Byrd, Marcia J. Drug and alcohol use by freshman at Siuslaw High School and their opinions regarding potentially effective drug and alcohol education programs, 1995. M.S., Oregon State University (Margaret M. Smith). (92pp 1f $4.00) HE 564

This study addressed the incidence of drug use by freshmen at Siuslaw High School in Florence, Oregon, and sought their opinions about effective drug and alcohol prevention programs. The purpose was to provide basic data which would ultimately assist in specific drug and alcohol programs for this population. In phase one, 83 students from four of seven freshmen Health Education randomly selected classes were given the Washington State Survey of Adolescent Health Behavior. This survey consisted of 81 questions about student demographics, students’ drug use, and their opinions of drug prevention programs. During phase two, the students were asked open-ended questions about their suggestions for more effective drug prevention programs and curriculum. The
survey revealed an average amount of drug use and that the students did not think the drug prevention program at Siuslaw was working. The survey also revealed that teenagers are influenced to drink and use drugs by the media, their friends, and by a lack of activities offered by the community. The study conclusions showed that Florence does have teenage drug use and the community should consider a variety of approaches. Data suggest that more youth support groups, more affordable counseling, and more recreational activities may help reduce drug use. The school needs to develop a more comprehensive drug prevention curriculum and implement it at the younger grade levels. The school combined with the community, should offer more drug-free alternatives and target those youths who are not using drugs and promote their positive behavior.

Hixson, Karen A. An epidemiologic investigation of the relationship between religiosity, selected health behaviors, and blood pressure, 1996. Ph.D., University of North Carolina at Greensboro (Harvey William Gruchow). (155pp 2f $8.00) HE 565

The purpose of this investigation was to examine both the direct and indirect relationships between various dimensions of religiosity (the quality of being religious) and blood pressure (BP). One hundred twelve UNC Greensboro and Salem College female alumni, living in Guilford and Forsyth Counties, who were 35 years or older and of Judeo-Christian faith, participated in the study. Following a 10-minute quiet rest period, three BP readings were taken with a validated Colins automated BP monitor at 5-minute intervals and the last two readings were averaged together. Height and weight were measured to determine body mass index. To measure religiosity, a 33-question multidimensional religiosity schedule (Koenig, Smiley & Gonzales, 1988), was utilized. A total religiosity score, as well as scores on nine dimensions (intrinsic religiosity, extrinsic religiosity, belief factor, religious well-being, organized religious activity, non organized religious activity, religious knowledge, religious experience, and religious coping) were determined. Leisure time physical activity, smoking, an interactive dietary variable (K:Na X Ca), alcohol consumption and control variables (age, socioeconomic status) were abstracted from questionnaires. Path analyses were conducted to determine the direct and indirect effects of religiosity on systolic blood pressure (SBP) and diastolic blood pressure (DBP). Multiple regression analyses were performed to estimate all path coefficients and provide estimates of the strengths of association along each path of the hypothesized model. The path analyses provided very little evidence of an effect of religiosity on BP through the intermediate health variables of alcohol intake, smoking index, diet, and physical activity. Rather, the direct effect of religiosity on BP was much more substantial, providing support for the hypothesis that religiosity may lower levels of BP by altering the perception of stress or improving the ability to cope with stress. In considering which dimensions of religiosity exerted the greatest influence on blood pressure, intrinsic religiosity and DBP displayed the strongest relationship, followed by religiosity coping and DBP. Diastolic BP was found to be influenced more by religiosity than SBP. The analyses also indicated religious experiences may have a greater beneficial effect on DBP for the 50 to 64 year age group and 65 to 80 year age group compared to younger participants. In conclusion, this study supports a direct relationship between religiosity (particularly intrinsic religiosity, religiosity coping, and religious experiences) and BP rather than an indirect effect through health behaviors.


The purpose of this study was to assess the health habits and counseling Practices of physicians and to determine if a difference existed between their health habits and counseling practices. The Physician’s Health Behavior and Counseling Practices Questionnaire was mailed to a population of 539 physicians. A total of 92 physicians (17%) returned the survey. Family practice and obstetricians/gynecologists were most likely to use the position to counsel the majority of patients about health habits. Body mass index results indicated that 76% of females and 54% of males were in the desirable weight category. Most physicians practiced safe driving habits, however only about half practiced universal safety precautions in their offices all of the time. The majority did not smoke cigarettes, drank little or no alcohol, and did not eat the recommended number of servings per day of complex carbohydrates or fruits and vegetables. Fewer than half of the physicians exercised regularly. The physicians with good health habits were more likely to do at least some counseling than those with poor health habits (t(86)=2.33, p=0.02). The majority of physicians reported counseling their patients for 3-5 minutes. The results of this study suggest that physicians should spend the extra time necessary to do a good job of counseling their patients or refer them to a specialist who has the time to formulate a proper behavior change strategy for the patient.

Landers, Susan K. A. Undergraduate students’ perceived reasons for selection of health promotion as a major, 1996. M.S., Purdue University (Robert W. Seehafer). (39pp 1f $4.00) HE 567

The purpose of the present study was to determine why undergraduate students choose to major in health promotion and to determine how many undergraduate students
are enrolled in Purdue University’s Health Promotion program. A survey of 60 undergraduate students at Purdue University was conducted to determine the reasons that students cite for selecting Health Promotion as a major. The results indicated that nearly 40% of students surveyed changed their major to health promotion after taking a health class that they enjoyed, while more than 60% chose health promotion on the recommendation of another person, primarily their academic advisor. Results also indicated that the current system of evaluating the number of undergraduate majors in Purdue’s program is flawed and, therefore, the investigator was unable to accurately determine the number of undergraduate majors currently enrolled. The information collected in this study will be valuable in determining future recruitment strategies and in the development of a better system of identifying the number of undergraduate majors enrolled in the program.

Larsen, Michelle H. *The development of spiritual health instructional strategies using a systems approach model*, 1994. M.S., Brigham Young University (Richard Hurley). (90pp 1f $4.00) HE 568

Most health educators agree that spiritual health involves giving meaning and purpose to life. Having a purpose in one’s life greatly influences all health dimensions and should be the base of instruction in health promotion and wellness programs. An important aspect of spiritual health, or giving meaning and purpose in one’s life, involves the component of decision making. This article is a summary of an instructional strategy development project for teaching the spiritual health component of decision making. A literature review identifying various spiritual health components preceded the development process. The development project includes the design, development, production, formative evaluation, and revision of an exportable form of instruction. The design process follows a systems approach model. The instructional strategies are presented using two objectives which involve decision making, values clarification, values to decision congruence, and goal making.

Quanrud, Audrey M. *Stages of change for smoking cessation, alcohol moderation, dietary fat reduction, and exercise adoption in a rural Minnesota county*, 1995. M.P.H., University of Wisconsin-La Crosse (Gary Gilmore). (96pp 1f $4.00) HE 569

A rural Midwestern sample (*N*=383) was measured on stage of change for 4 behaviors linked to chronic disease. A survey that combined staging algorithms and age, gender, education, and occupation questions was developed. Residents over age 21 in 5 communities were approached to complete the survey at public locations during 1 month. Most residents had never smoked (58%) or drunk alcohol (66%) at the limits specified (5 drinks for men and 4 for women per occasion) and were excluded from stage analyses. Maintenance was the largest group for smoking, alcohol, and dietary fat, followed by Precontemplation. The largest group for exercise was Preparation, followed by Maintenance. These distributions were found to be statistically significant. There was an association between dietary fat stage of change and stage for the 3 other subscales. Ss aged 65+ and the retired were in a later stage of change for dietary fat. Farmers, males, and Ss in their 20’s were in an earlier stage of change for dietary fat. Ss aged 65+ were in a later stage of change for exercise. Being younger than age 50 was associated with an earlier stage for smoking. No significant differences were noted for alcohol or for education. Health promotion strategies for this population based on the stages of change theory are discussed.

Scott, Lisa A. *Are health educators socialized to perceive role modeling as a professional responsibility*, 1996. M.S., Purdue University (David R. Black). (56pp 1f $4.00) HE 570

The purpose of this study was to assess factors that may influence health education graduate students’ perception that role modeling healthy behaviors is a professional responsibility. Subjects were 205 master and doctoral health education graduate students who were requested to complete a questionnaire assessing components of Personal Investment Theory (PIT). Results suggest that students are not socialized to perceive role modeling as a professional responsibility, rather they bring to the profession an inclination to role model and a preconceived notion of their professional role and responsibility to do so. The perception that role modeling healthy behaviors increases students’ career opportunities is the most predictive of students’ belief that role modeling is an important part of an effective health educators’ professional responsibility. Fitness, nutrition, and weight and/or bodyfat ratio are significantly associated with students’ self ratings as role models of healthy behaviors. The theoretical, practical, and professional implications of these findings are discussed and recommendations for future research provided.

Shields, Lionell, III. *A comparison between the number of European Americans, African Americans, and other minority races who enter Phase I and Phase II cardiac rehabilitation programs*, 1995. M.S., University of Wisconsin-La Crosse (Philip K. Wilson). (60pp 1f $4.00) HE 571

A questionnaire was sent to directors, RNs, and/or exercise physiologists at 50 hospitals to determine if an equal proportion of people were entering Phase I and II of cardiac rehabilitation in regard to race. The participants were chosen from programs listed in the American Association of Cardiovascular and Pulmonary Rehabilitation Directory. The patients used for the questionnaire
were required to have had surgery, a myocardial infarction, or diagnosed with heart disease and were, less than a year later, participating in Phase I and/or II cardiac rehabilitation. Twenty-eight of the 50 questionnaires were returned, which represented a return rate of 56%. The data were converted to percentages and means. A chi-square analysis was used to test for significant differences between expected and observed proportions of people entering small and large cardiac rehabilitation programs. Significant differences were found in large cardiac rehabilitation programs with Asian and Pacific Islanders, Hispanics, and American and Alaskan Natives entering in less than expected proportions. In small cardiac rehabilitation programs, Asian and Pacific Islanders also entered cardiac rehabilitation Phase I and II programs in less than expected proportions. The null hypothesis was rejected which stated that there were no significant differences between expected and observed proportions for European American, African American, or other minority races who entered Phase I and/or II cardiac rehabilitation programs.

**RECREATION AND LEISURE**

Black, William L. *The rebirth of the historic old Hole-in-the-Rock Trail as a recreational trail*, 1995. M.A., Brigham Young University (Benjamin F. deHoyos). (244pp 3f $12.00) RC 495

This study researches and documents the history of the rebirth of the old pioneer Hole-in-the-Rock Trail as a recreational trail. Subproblems were: a) identification of the personalities and events that instigated the recreational use of the old trail, b) identification of the folklore which is perpetuated by modern users of the trail, and c) collection of existing home movies, photographs, slides, and video tapes which document early recreation treks. Findings include: the development of four-wheel drive vehicles made the trail more accessible to recreational trail users; an understanding of the historical nature of the trail enhances the recreational experience; and the rich folklore which exists about the trail heightens the leisure experience.

Burns, Martha J. *Tourism marketing on the World Wide Web: a study of state, provincial and territorial Website development and perceived usefulness*, 1996. M.S., Purdue University (William Theobald). (90pp 1f $4.00) RC 496

The Internet is the world’s single largest networked community; it spans every continent, thousands of networks, millions of computers, and tens of millions of people. It is doubling in size every year (Prettejohn, 1996). Tourism is considered one of the world’s largest industries, yet there are no studies relating to tourism marketing on the Internet. This is an area that could benefit from investigation and the purpose of this study is to establish US state and Canadian provincial and territorial destination marketing organizations’ (DMOs) use of the Internet’s World Wide Web. The study also measures the usefulness of the Web as perceived by the DMOs in 13 areas generally considered to be the responsibility of these organizations. This study is designed to be exploratory in nature, serving as a baseline for on-going longitudinal studies into the growth and effectiveness of tourism marketing on the Web. To gather information on budget, level of use, marketing strategy, and perceived usefulness of the Web from the total of US and Canadian destination marketing organizations, a survey was conducted using a postal questionnaire. Baseline figures on development and maintenance budgets, number of “hits,” conversion mechanisms, and target markets were established. Significant differences between on-line and not on-line DMOs were found in four areas of perceived usefulness. Those DMOs not yet on-line perceive the Web as less useful in attracting new visitors, education and public relations, selling the state’s services, and market research.


This thesis examined the “associational” activities of the African American population of the United States between the 1850s and 1940s, specifically the communities of Northern California and especially those of the Greater San Francisco Bay Area. The investigation focused on a number of closely related issues coalescing around the major themes of ethnicity, cultural pluralism, various leisure pastimes, and organized physical recreations. In search of a better life, a substantial number of Blacks migrated to the Pacific West during the second half of the nineteenth century. The majority initially located in the Bay Area, especially San Francisco. By the early 1900s, significant numbers also began to reside in Oakland, Berkeley, and other East Bay towns such as Richmond. In these communities they built homes, founded churches, established businesses, sought employment, and raised their families. The resident Black community included a number of men and women who considered themselves “representative” African Americans. As leaders of their communities, these individuals endeavored to practice civil and political rights guaranteed them by the United States Constitution and improve conditions for their community at large and educational opportunities for their children. To help advance these goals, they founded a variety of organizations that served their community in numerous ways. The establishment of and participation in such organizations as mutual aid and benevolent societies, military companies, masonic orders, the California State Federation of Colored Women’s Clubs, the Booker T. Washington Community
The Rocky Mountain States. The response (Battery LDB) short form version B were mailed to adults. Being Scale (SWBS), and Ellis and Witt’s Leisure Diagnostic Well-Being scale (RWB), a subscale of the Spiritual Well-being scale. Ellison and Paloutzian’s Religious (1991) and Dustin (1994) make it clear that there is a need for research in this area. Although several authors have indicated a tie between the spiritual domain and leisure, there is a scarcity of references and almost no research. McDonald and Schreyer (1995) was too low to make any statistical inference. The squared canonical correlation values were .23 and .11 with a probability of .09 which is above the .05 alpha level. These results do not indicate a relationship between the spiritual and leisure responses of the 84 participants, but does reaffirm the difficulties in researching the spiritual domain. Keywords: Spirituality, Leisure, Leisure functioning, Freedom, Perceived Freedom, Spiritual Well-Being Scale, Leisure Diagnostic Battery, Spiritual Benefits.

The purpose of this study was to investigate the possible relationship between spirituality and leisure functioning. Although several authors have indicated a tie between the spiritual domain and leisure, there is a scarcity of references and almost no research. McDonald and Schreyer (1991) and Dustin (1994) make it clear that there is a need for research in this area. Ellison and Paloutzian’s Religious Well-Being scale (RWB), a subscale of the Spiritual Well-Being Scale (SWBS), and Ellis and Witt’s Leisure Diagnostic Battery (LDB) short form version B were mailed to adults residing in 750 households within the urbanized areas of the Rocky Mountain States. The response ($\beta_{11}=$84) was too low to make any statistical inference. The squared canonical correlation values were .23 and .11 with a probability of .09 which is above the .05 alpha level. These results do not indicate a relationship between the spiritual and leisure responses of the 84 participants, but does reaffirm the difficulties in researching the spiritual domain. Keywords: Spirituality, Leisure, Leisure functioning, Freedom, Perceived Freedom, Spiritual Well-Being Scale, Leisure Diagnostic Battery, Spiritual Benefits.

The relationship between spirituality and leisure functioning in adults, as measured by spiritual well-being and perceived freedom in leisure, 1994. M.A., Brigham Young University (S. Harold Smith). (84pp 1f $4.00) RC 498

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Fear of falling among community elders, 1996. D.Ed., Temple University (Jay S. Segal). (133pp 2f $8.00) PSY 1885

The purpose of this study was to investigate specific relationships of fear of falling, health locus of control, perceived anxiety, functional level, and selected sociodemographics of adults over 60 years of age in the Philadelphia area in 1995. Four senior community centers were chosen from the Philadelphia Corporation on Aging (PCA) listing and a center was selected at random to represent the north, east, south, and west neighborhoods of the city. The correlational survey was selected as the most appropriate method for data collection. The convenience sample consisted of 114 subjects who were attending the community centers on data collection days. Data were collected using a questionnaire which was constructed using Tinetti’s Falls Efficacy Scale, Wallston’s Health Locus of Control Scale, Spielburger’s Trait Anxiety Scale, an adapted version of Groningen’s functional level assessment, and a sociodemographic questionnaire. Certification of review and approval of this project involving human subjects was obtained on May 9, 1995. The questionnaire was piloted on 19 community elders yielding an alpha reliability of .78. The data were collected in late spring, 1995 and analyzed using Spearman rho correlation procedure, Mann Whitney U analysis of variance, multiple regression, and other appropriate tools. The results indicated that fear of falling, in this sample, is highly related to functional level; additionally, this fear increases with age, increased medication use, and a history of a recent fall. Health locus of control, although predominately external in this sample, was not significantly related to functional level. Interestingly, trait anxiety was inversely related to age and was not significantly related to functional level. Regression analysis indicated that fear of falling was a strong predictor of functional level with an R² of .791 accounting for 63% of the variance in functional level. Fear of falling greatly overshadowed all other predictor variables in the regression equation. Within the limitations of this study, the major implication is that fear of falling is related to and predictive of functional level among community elders.

PSYCHOLOGY

ANXIETY

Fear of falling among community elders, 1996. D.Ed., Temple University (Jay S. Segal). (133pp 2f $8.00) PSY 1885

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BEHAVIOR ANALYSIS

Allemier, Meredith Frances. CIAU athletes’ use and intentions to use performance enhancing drugs: a study utilizing the Theory of planned behaviour, 1996. M.A., University of British Columbia (Sharon Bleuler). (197pp 3f $12.00) PSY 1878
A recent investigation of CIAU athletes' drug using behaviours revealed that performance enhancing drug use is still occurring in CIAU sport (Spence & Gauvin, 1994). Although testing has its place in dissuading drug use, it may be more effective to employ drug education programs in an attempt to prevent drug use before it occurs. In order to implement an effective CIAU drug education program it is necessary to first understand the antecedents of performance enhancing drug use. Although theory has not been used in the past to predict performance enhancing drug use, specific theories may add significantly to the understanding of antecedent factors that might be associated with the use of performance enhancing drugs. In particular, a theory such as the Theory of Planned Behaviour (TPB) because it has been used successfully to predict both recreational drug use and exercise adherence, may be the most useful theory for this purpose. Additional variables that may assist in the prediction of performance enhancing drug use are habit strength and self-esteem / body image. Male CIAU football, wrestling, ice hockey, swimming and track & field athletes (N=182) completed and returned “The CIAU Modified Version of the National Survey of Youths’ Attitudes Towards Performance Enhancing Substances” questionnaire. Their answers were subjected to both a confirmatory factor analysis (CFA) and hierarchical regression analysis. The CFA revealed a very poor fit between the data and the model consisting of the variables of the TPB (i.e. attitudes, subjective norms, perceived control) and the added variable of self-esteem / body image, [X2 (98, N=182)=518.45, p<.05]. The hierarchical regression analysis, however, found the TPB variables both alone, [F (3, 178)=12.50, p<.001] and in combination with habit strength and self esteem / body image, [F (5, 176)=1.17, p<.001] to significantly predict subjects’ intentions to use performance enhancing drugs. Together the five variables accounted for 25% of the variance in subjects’ intention scores. This was below the predicted level of 40%. The CFA results suggest that the current questionnaire may not be measuring the variables of the TPB and the variable self-esteem / body image as accurately as would be desirable. Nevertheless, the results from the regression analysis suggest that the TPB may in future be used to better explain and predict performance enhancing drug use among male CIAU athletes, especially when the TPB is combined with measures of the variables self-esteem / body image and habit strength. Recommendations for CIAU drug education programs are also made based upon these results.


This research studied the behavior, attitudes, and buying patterns of Chinese sports consumers toward sporting goods as reported by 2,155 respondents in the 10 selected cities in China. Questionnaires were administered to a judgmental quota sample which were assigned to one of four age groups (18-25; 26-35; 36-45; above 45); with each age group having equal males and females. The survey instrument was printed in China and the data were collected on a Sunday, which was the only day most people were out of their houses for shopping or recreation. In each city, the research director selected the data collection site and supervised 8-10 trained selected data collection workers. The workers were stationed at questionnaire distribution tables and handed the questionnaire to the subjects, who completed and returned it immediately. The analysis of the data was performed using the SPSS Statistical Analysis System on the Brigham Young University VAX computer. Cross-tabulation and chi square statistics were used to examine the relationship between consumer segments. The data reveal several major findings, which should be highlighted, about the Chinese sport consumers’ behavior, attitudes, and buying patterns toward sporting goods. Therefore, special considerations should be made in Chinese sports manufacturing and marketing. Key Words: Chinese sport consumer, behavior, attitudes, buying patterns, sporting goods, sports marketing

Hazavehei, Seyyed M. M. *The effects of 6-week and 12-week rehabilitation programs on the depression level of cardiac patients*. 1993. Ph.D., Texas Woman’s University (William B. Cissell). (166pp 2f $8.00) PSY 1889

Cardiac patients after an event, such as myocardial infarction (MI), coronary artery bypass graft surgery (CABGs), and percutaneous transluminal coronary angioplasty (PTCA), or/and heart transplant, commonly experience prolonged psychological depression following hospital discharge. This study was designed to investigate the effect of cardiac rehabilitation programs (CRPs) on the level of depression of cardiac patients. A three group, pre-, post, and post-posttest, quasi-experimental study was designed to evaluate whether or not participating in 6-week (n=31) or 12-week (n=35) CRPs (experimental groups) affected the level of depression. Among the subjects, there were 113 cardiac patients, including 85 males and 28 females with the mean age of 64 (±11.2) years. The CRPs were designed to enhance physical functioning, performance of activities of daily living, and educational information related to their condition. Levels of depression of patients were assessed by the Geriatric Depression Scale (GDS). The experimental groups completed the GDS questionnaire on three separate occasions, pretest, posttest (after 6 weeks), and post-posttest (after 12 weeks). The level of depression increased for all groups, but it increased most for the patients in the control group (n=47). A significant difference (F=72.11, p<0.001) was found in the scores on the GDS for all groups between the testing points (pretest, posttest, & post-posttest). Also, a significant interaction was found between the length of time cardiac
patients participated in CRPs and the groups to which they belonged ($F=3.96$, $p<0.004$). However, no significant difference was found between the groups ($F=4.44$, $p=0.644$). Thus, CRPs appear to be effective in cardiac patients who participate in them by enhancing coping ability and tolerance to increasing levels of depression over a period of time.

Kartschoke, Christopher. *The difference between participation in intercollegiate athletics and academic performance based on time use*, 1995. M.S., University of Wisconsin-La Crosse (Jane Meyer). (67pp 1f $4.00$) PSY 1891

Student-athletes’ (SA) GPA’s were compared to those of nonstudent-athletes (NSA), and male GPA’s were compared to female GPA’s. Results showed no significant (p>0.05) difference in GPA’s of SAs and NSAs, but females had significantly (p<0.05) higher GPA’s than males. 355 respondents completed a questionnaire (175 NSAs and 180 SAs). Respondents indicated amount of time spent during the week and weekend regarding various activities. SAs spent significantly (p<0.05) more weekend time watching television and doing household chores than NSAs. SAs spent significantly (p<0.05) less weekday time working at a job, playing a musical instrument, and participating in band, cheerleading, and clubs than NSAs. SAs spent significantly (p<0.05) less weekend time working at a job, reading things not connected with school, playing a musical instrument, and participating in band, cheerleading, and clubs than NSAs. There was no significant (p>0.05) difference between SAs and NSAs in time spent going to class, doing homework, or studying.

Lantz, Christopher D. *Validation of a conceptual model characterizing college student-athletes’ readiness to retire from competitive sport participation*, 1995. Ed.D., West Virginia University (Andrew C. Ostrow, Edward F. Etzel). (66pp 1f $4.00$) PSY 1893

This study introduced a conceptual model characterizing college student-athletes’ readiness to retire from competitive sport participation. The conceptual model consisted of four factors: 1) athletic identity, 2) role conflict, 3) future planning, and 4) achievement satisfaction. The three purposes of this study were: 1) to examine the evidence supporting the validity of the proposed conceptual model through validation of the Life Transitions Inventory for Athletes (LTI-A); 2) to establish convergent validity of the future planning subscale of the LTI-A; and 3) to investigate the differences between various subgroups on the Student Developmental Task and Lifestyle Inventory (SDTLI).

Student-athletes ($n=106$) and non-athlete-students ($n=159$) completed the SDTLI. Student-athletes also completed the LTI-A. Principal components analysis with varimax rotation on the LTI-A items resulted in six factors being retained accounting for 67.2% of the variance. Convergent validity estimates indicated a significant, positive correlation ($r=0.35$) between the future planning subscale of the LTI-A and the career planning subtask of the SDTLI.

Relative to the educational involvement and career planning subtasks of the SDTLI, MANOVA procedures indicated a significant main effect for class rank with seniors demonstrating higher levels of development than did freshmen or sophomores. Results are discussed in terms of developmental programming and future research directions are suggested. Key words: retirement, athletic identity, role conflict, achievement satisfaction, SDTLI.

**MOTIVATION**

Becker, Susan L. *An examination of the relationship among TARGET structures, team motivational climate, and achievement goal orientation*, 1995. Ph.D., Oregon State University (Sandra J. Suttie). (148pp 2f $8.00$) PSY 1880

Current research on sport motivation has focused primarily on goal perspective approaches in an attempt to understand behavior in achievement situations (Ames, 1984; Nicholls, 1984). According to Nicholls’ (1984) theory, the achievement goal orientation an individual develops may be influenced by both individual differences and situational factors. Relative to situational factors, the team motivational climate may promote either a task-involved or an ego-involved orientation dependent upon which goal orientation is emphasized by the coach. In addition, Ames (1992a) argued that environmental structures influence the motivational climate which ultimately impact the athlete’s achievement orientation. Educational research (Epstein, 1988) has identified specific environmental structures (TARGET structures) as being salient to the development of a mastery climate. Little research has been conducted on athletes’ perceptions of their coaches’ behavior, in regard to specific environmental structures, and how this may ultimately influence athletes’ achievement goal orientation. Thus, the purpose of this study was to examine the relationship among TARGET structures, team motivational climate, and achievement goal orientation. The subjects consisted of 186 high school softball players and 171 high school baseball players, ranging in age from 14 to 18 years. The TEOSQ, PMCSQ, and TARGET questionnaires were administered to subjects at the beginning of a sport practice. LISREL8, a structural equation modeling program, was the statistical analysis employed. Results indicated that a positive linear relationship existed, linking task and reward/evaluation components of the TARGET structures to mastery climate to task orientation. These two structures may be the most salient structures within a sport setting. This finding suggests there is a positive association between coaches’ promotion and employment of task-involved goals in their practices and athletes’ perception of a mastery-oriented team motivational climate. Direct
relationships linking three TARGET structures to performance climate to ego orientation were also reported. Grouping and authority components of the TARGET structures were found to have a significant inverse relationship with performance climate, while task structure and performance climate were positively related. Additionally, the results confirmed that there was a significant positive relationship between mastery climate and task orientation and between performance climate and ego orientation.

Putnam, Kelly. Effects of positive reinforcement on influencing grip strength performance of college-aged females, 1994. M.S., Texas Woman’s University (Ron French). (127pp 2f $8.00) PSY 1898

The effects of extrinsic, positive reinforcement (social and tangible) on influencing grip strength performance of college-aged females was examined in this study. A reward preference survey was administered to the total population of six physical education classes to assess which extrinsic rewards best motivated each individual in a physical activity. After determining which extrinsic reward (social or tangible) was ranked 1 by each student, all potential subjects contributed to data collection by participating in two trials of grip strength tests using a hand dynamometer. Students were placed in one of two conditions based on their reward preference choice: (a) Experimental-Social Reward Group or (b) Experimental-Tangible Reward Group; and placed in the Control Group if they were members of the investigator’s classes. After all students had participated in the grip strength tests, forty-five subjects were randomly selected to be included in the final data analysis. A one-way analysis of covariance was used to analyze the data on the adjusted posttest scores on the grip strength test. Results of the analyzed data indicated that there was no significant difference between the three groups on grip strength performance $F(2)=2.28$ $p>.05$. Therefore, it can be concluded that extrinsic positive reinforcement does not have a significant influence on grip strength performance of college-aged females.

**MOTOR LEARNING AND CONTROL**

Adams, Deborah. The relative effectiveness of three instructional strategies on the learning of an overarm throw for force, 1994. Ph.D., Oregon State University (Debra J. Rose). (156pp 2f $8.00) PSY 1877

This study investigated the relative effectiveness of three instructional strategies on the learning of an overarm throw for force among preadolescent females. Subjects were randomly assigned in equal numbers to one of the following instructional strategies: a correct model supplemented with verbal cues, a learning model supplemented with verbal cues, and verbal cues only. The performance outcome, the quality of the motor reproduction, and the accuracy of the cognitive representation of the skill were measured to elucidate the effectiveness of the instructional strategies. A pictorial arrangement test and a cognitive recognition test of correct form were used to describe the quality of the cognitive representation. The performance of an overarm throw was evaluated using both a behavioral analysis and biomechanical techniques to provide information about form and outcome. All groups were tested on four occasions, prior to each day of a three day instructional strategy intervention and two days after instructional intervention. A 3X4 (Instructional Strategy X Test Session) repeated measures MANOVA incorporated the dependent variables: overarm throwing form score, pictorial-arrangement test score, and a dynamic cognitive recognition score. The results of the repeated measures MANOVA revealed a significant test session main effect only (Wilks Lambda=.226, $F(9,25)=9.40$, $p<.001$). Follow-up univariate F tests and trend analyses indicated that subjects in all groups showed significant improvement in overarm throwing form and in the accuracy of the cognitive representation of the motor skill. A 3X4 (Instructional Strategy X Test Session) repeated measures ANOVAs were employed to separately analyze four kinematic variables. The results obtained from the ANOVAs, based on an alpha value of .02, indicated statistically nonsignificant improvement in performance of the overarm throw. However, the kinematic variable pertaining to stride length revealed $p=.029$ for test session and observed trends indicated increased stride length and hip displacement for all subjects across the four test sessions. In conclusion, the results indicated that all three instructional strategies assisted the learner in the achievement of a more accurate cognitive representation and the ability to reproduce a more mature overarm throwing pattern. This study revealed the importance of verbal cues which describe the critical transitional positions of the body throughout the coordinated movement. In addition, observing a learning model who demonstrated movement errors was not detrimental to the viewer’s learning of a skill.

Beyer, Roberta. Motor proficiency of males with attention deficit hyperactive disorder and males with learning disabilities, 1993. Ph.D., Texas Woman’s University (Jean Pyfer). (119pp 2f $8.00) PSY 1881

The purpose of the present study was to examine the motor proficiency of children with attention deficit hyperactive disorder and those with learning disabilities to determine whether there are differences. Data were collected from the Institute for Mental and Physical Development at Texas Woman’s University, three private schools in Dallas, Texas, and one school in Newport, California. Subjects were administered the Bruininks-Oseretsky Test of Motor Proficiency. The data were
analyzed for age and condition differences in regard to the raw scores of the seven motor proficiency variables using a two-way multivariate analysis of variance. Based on the results, medicated (Ritalin) males with ADHD-noLD had significantly poorer performance than males with LD noADHD on all variables except balance, upper-limb coordination, and response speed. Males 9 to 12 years performed better than males 7 to 8 years on all variables except for visual motor.

Goodwin, Jeff E. Bandwidth knowledge of results in motor skill performance and learning, 1994. Ph.D., Texas Woman’s University (Harry Meeuwsen). (267pp 3f $12.00) PSY 1888

This investigation examined the effects of different distributions of relative frequency of KR on the acquisition and retention of the golf putt by manipulating KR bandwidth. One-hundred-twenty students participated, and were randomly assigned to one of four conditions. The BW0% condition received KR according to a 0% bandwidth. The BW10% condition received KR according to a 10% bandwidth. The SHRINKING-BW condition started with a 20% bandwidth that was systematically reduced by 5% after each set of 20 trials. The EXPANDING-BW condition received a bandwidth schedule opposite that of the SHRINKING-BW condition. The 100 acquisition trials consisted of putting a golf ball over a distance of 4.58 m. Two retention tests of 10 minutes and 48 hours were administered under either a no-KR or KR retention condition. Results for acquisition relative frequency of KR revealed that the EXPANDING-BW condition produced greater relative frequency of KR early in acquisition, but smaller relative frequency of KR later in acquisition compared to the BW10% condition. The SHRINKING BW condition produced smaller relative frequency of KR early in acquisition, but greater relative frequency of KR later in acquisition compared to the BW10% condition. Results for retention revealed that the BW10% and EXPANDING-BW conditions performed with smaller error compared to the BW0% and SHRINKING-BW conditions on the 48 hour, no-KR retention test. Results also revealed that the BW0% and SHRINKING-BW conditions performed with greater error on the trial blocks for the 48 hour, no-KR retention test compared to the trial blocks for the 10 minute, no-KR retention test. These results suggest that receiving high relative frequency of KR at the end of the acquisition phase is as detrimental to motor skill learning as receiving KR after every trial. The results of the 48 hour, no-KR retention test provides partial support for the guidance hypothesis which predicts that frequent KR is attention demanding, resulting in learners not evaluating their own errors via analysis of intrinsic feedback.

Lajoie, Jennifer M. The control of movements which vary in accuracy and complexity, 1996. M.S., University of British Columbia (Ian Franks). (161pp 2f $8.00) PSY 1892

The time required to program a movement response (reaction time) has been found to be directly related to the accuracy requirements of the response (Sidaway, 1991) as well as to the number of movement segments comprising the response (Henry & Rogers, 1960). However, since many of the experiments which have manipulated response complexity have concurrently manipulated the amplitude of the entire movement (Fischman, 1984; Lajoie & Franks, 1995), it was not possible to determine which of these factors was responsible for the change in reaction time. The main purpose of the present experiment was to determine whether the time required to program a limb movement was affected by response complexity, by movement amplitude, by target size, or by some combination of these factors. To answer this question, fourteen subjects made forearm extension and extension-flexion movements of varying amplitudes in the horizontal plane, to targets of varying sizes. The kinematic properties of these movements and the muscular activity which accompanies them (measured by EMG) were also investigated to determine whether these movements were exclusively programmed prior to movement initiation or whether some programming occurred during the execution of the movement. Pre-motor reaction time was found to be dependent upon response amplitude more than it was on response complexity or target size. However, a variation in the terminal target size was found to effect the kinematics of the entire movement, while a variation in the size of the start target was found to affect the kinematics of the initial portion of the movement. In addition, subjects adopted on-line control when the amplitude of the movement was increased and when the terminal target size was decreased. Finally, subjects appeared to control the EMG activation of their muscles by pre-programming the pattern of activity prior to movement initiation as well as controlling it during movement execution.

Moore, Robert E. Effects of the use of two different teaching styles on motor skill acquisition of fifth-grade students, 1996. Ed.D., East Texas State University (Fred Blohm). (87pp 1f $4.00) PSY 1894

The purpose of this study was to determine whether Mosston’s Practice Style (B) or Reciprocal Style (C) was more effective in teaching overhand serving and forearm passing volleyball skills to fifth-grade male and female physical education students. The skill of overhand serving was pretested, then students were exposed to either the Practice Style (B), or Reciprocal Style (C), or (in the case of the control group) no teaching style, and finally students were posttested. The skill of forearm passing was pretested, taught, and posttested in the same manner. The serving skills portion of the study lasted nine days and the forearm passing segment lasted nine days. Using the Multivariate ANOVA the researcher determined that the
Laboratory studies of motor short term memory (STM), characteristically conducted using linear positioning as the movement and adults as subjects, have revealed a number of fundamental principles regarding motor STM. In particular location has been shown to be a more accurate cue for movement recall than distance, although this superiority is most pronounced for long movements, and the encoding of both distance and location has been shown to be subject to mutual interference effects such that the recall of distance is biased toward criterion movement (CM) location and the recall of location is biased in the direction of the CM distance. To date these findings from laboratory studies of adult limb movements have been used as the basis for drawing long ranging implications, including implications regarding how motor skills should be presented to, and practiced by, school-aged children. The purpose of this thesis was to ascertain whether the same principles which govern the motor STM performance of adults on laboratory tasks indeed govern the performance of school-aged children performing gross motor skills in a field setting. A set of eight experiments were conducted, consisting of four pairs of experiments. Each pair of experiments utilized identical experimental designs with the first experiment in the pair being conducted in the laboratory using a traditional linear positioning task and the second experiment being conducted in the field involving a gross walking/jogging analogue of the laboratory task. In Experiments 1 and 2 100 school-aged subjects (drawn evenly from 6, 9, 12, 15, & 18 year age groups) recalled constrained CMs using either distance or location cues from altered recall starting positions (RSPs). The findings from the two task settings were generally similar with clear developmental trends on both tasks, a persistent superiority for recall of location rather than distance, and, for the younger subjects at least, mutual interference effects between distance and location in terms of response bias. The only lab-field differences were the absence of a mediating effect of movement length on cue utility in the field setting (although the movement lengths cannot be easily equated across the two settings) and the failure of CM distance to influence the recall of location for older subjects in the field task. Experiments 3 and 4 compared recall performance of constrained and preselected movements under both task settings and, although a preselection superiority was obtained throughout, the same basic findings regarding age and motor STM principles emerged in both settings and for both movement types. Experiments 5 and 6 examined the same variables as Experiments 1 and 2 but with preselected rather than constrained movements. Again performance improved with age, movement length interacted with cue utility in the laboratory but not in the field task, and distance and location cues interfered with each other for all age groups in the laboratory task and for the younger subjects in the field study. To facilitate the encoding of location cues and improve the ecological validity of the experiments, vision...
was introduced in Experiments 7 and 8, using an experimental design which included vision in both the encoding and retrieval stages (VK-VK), vision selectively in only the encoding or retrieval stages (VK-K & K-VK) and no vision (KK). Again movement location was significantly more accurately recalled than movement distance. Likewise, the mutual interaction of distance and location cues emerged for all the age groups with the subjects being apparently unable to recall either movement cue without the interference of the other parameter inherent within the movement, even with the availability of vision. The responses of the VK-VK group were significantly more accurate than the other three groups. Visual dominance was observed in the part-visual conditions (K-VK & VK-K). Age differences in performance were evident in all experiments and these appeared to be at least partially attributable to developmental differences in cognitive strategy usage. Age however interacted only minimally with the other main factors influencing motor STM indicating that, as a general rule, the same principles governing motor STM performance in adults also act in controlling the motor STM performance of school-aged children. Likewise the findings regarding motor STM performance were remarkably similar between the laboratory and field task, given the gross differences in the mechanical nature of the two tasks. The same basic principles and limitations appear to underlie motor STM performance regardless of whether a unidirectional single limb movement or a gross bipedal movement is being controlled, arguing against task-specific or limb-specific explanations of motor STM performance. The implications of the empirical findings of the experimental series and directions for future research are considered in the concluding chapter.

Smithee, Larry L. Effects of contextual interference on initial learning of tennis groundstrokes, 1994. M.S., Brigham Young University (Larry T. Hall). (65pp 1f $4.00) PSY 1901

Previous motor learning research has demonstrated that random (high contextual interference) practice schedules facilitate retention and novel transfer of motor skills better than blocked (low contextual interference) practice schedules. The purpose of this study was to investigate the generalizability of contextual interference effects to instructional settings where novices learn gross open motor skills. University students (33 women) from three beginning tennis classes were randomly assigned to one of four experimental conditions: random acquisition/random test, random acquisition/blocked test, blocked acquisition/random test, or blocked acquisition/blocked test. Subjects performed 40 trials, 10 each of four tennis groundstrokes every class day. The experiment was conducted during the first 13 class days of instruction. Groundstrokes learned were the forehand down-the-line, forehand cross-court, backhand down the-line, and backhand cross-court. A pretest, midtest, and posttest were administered on the 1st, 8th, and 13th class days, respectively. Analysis of variance indicated that all treatment groups improved but that there were no significant treatment effects during acquisition. Due to using novice performers as subjects, variability of data points was relatively large. Similar experiments using novices may achieve more definitive results by using a larger subject pool. Subjects with intermediate or advanced tennis skills may demonstrate the contextual interference effect more readily than novice subjects. Participation in tennis skills practice by subjects outside of the experiment had an unquantified masking effect on the results of this experiment.

PERCEPTION

Peterson, Kirk. Perceptions of psychological momentum by female competitive swimmers: a phenomenological investigation, 1996. M.S., University of Tennessee (Craig A. Wrisberg). (74pp 1f $4.00) PSY 1897

The purpose of this investigation was to examine the perceptions of psychological momentum by female competitive swimmers. The study involved Four elite NCAA Division I swimmers, who were national qualifiers. Two were sprinters and two were distance swimmers. A qualitative research technique was used that involved a semi-structured phenomenological format which allowed for each participant to discuss their perceptions of a swim where nothing went wrong and everything seemed to click or just happen. The initial interview lasted approximately sixty minutes and a follow-up interview lasted approximately thirty minutes. Qualitative analysis revealed several emerging themes pertaining to psychological momentum that included: (a) the use of mental plans, and (b) a sensation of flying or unconscious effort.

PERSONALITY

Holmes, Patricia A. Personality types of NCAA and NAIA male and female administrators: a descriptive study, 1993. Ph.D., Texas Woman’s University (Jean Pyfer). (105pp 2f $8.00) PSY 1890

The purpose of this study was to determine and compare the personality types of male and female athletic administrators in the National Association of Intercollegiate Athletics (NAIA) and Divisions II and III of the National Collegiate Athletic Association (NCAA), as determined by the Myers-Briggs Type Indicator. A cover letter, copies of the Myers-Briggs Type Indicator (Form G), and demographic questionnaire were mailed to 100 female and 100 male participants during April 1992. Seventy-eight males and 73 females replied. The demographic questionnaire revealed that the majority of female respondents were 45 to
54 years of age, had been in their current athletic administrative positions from five to nine years, were single, and possessed masters degrees. The majority of the males were also in the 45 to 54 years of age range, had been in their present athletic positions from five to nine years, were married, and possessed masters degrees. Chi-square was used as the statistical treatment to determine the results of the three hypotheses. According to the Myers-Briggs Type Indicator, there is no difference between the school division and personality preference for male athletic administrators and female athletic administrators. Division II male and female athletic administrators, Division III male athletic administrators, and NAIA female athletic administrators were for the most part found to be ISTJ’s (introvert, sensing, thinking, judging). Division III female athletic administrators and NAIA male athletic administrators were mostly ESTJ’s (extravert, sensing, thinking, judging). Combining all divisions, the majority of female athletic administrators were ISTJ’s and the majority of male athletic administrators were ESTJ’s. Overall, there were more ISTJ types than any other type. It was, therefore, concluded that both male and female athletic administrators possess one of two Myers-Briggs personality types (ISTJ or ESTJ).

**SELF CONCEPT**


Several studies have been done on wilderness programs for youth-at-risk, but very little research has been done in the area of “therapeutic” wilderness programs for youth-at-risk. The Aspen Achievement Academy, a 52-day wilderness therapy program, is the primary focus of this study. Since September 1993, the Tennessee Self-Concept Scale and the Rotter’s Locus of Control Scale have been administered to all youth prior to and following their participation in the Aspen Achievement Academy wilderness therapy program. A t-test was performed on the Tennessee Self-Concept Scale and the Rotter’s Locus of Control Scale to find out if there was a measurable change between the pretest and the posttest of each of the two tests (N = 33). The statistical analysis of the Tennessee Self Concept Scale, for the total positive score, showed a p-value of .7961 while the Rotter’s Locus of Control Scale showed a p-value of .1535. Both p values are above the alpha level of .05, demonstrating an absence of statistical significance. A Pearson Product Moment Correlation was also conducted to discover the relationship between the Tennessee Self-Concept Scale and the Rotter’s Locus of Control Scale. An overall correlation of .019 was found which scored below the .3494 required to claim a relationship. Key Words: Aspen Achievement Academy, Locus of Control, Self Concept, Wilderness Therapy Program, Youth-at-Risk.


This study investigated the relationship between physical self-perceptions and functional muscular strength (FMS) in females. Thirty-seven subjects between the ages of 19-28 participated. The Physical Self-Perceptions Profile (PSPP), which assesses physical self-perceptions (PSP) in the areas of sports competence, physical condition, body appearance, muscular strength, and general self-worth was administered to all subjects along with the Body Cathexis Scale (BCS), which assesses body image. FMS was assessed using 5 muscular performance tests: push-ups, pull-ups, sit-ups, stepping, and lifting. The results indicated that significant (p<.05) correlations existed between all PSPP scores and all FMS scores except for the relationship between sports competence and the sit-up score. Significant (p<.01) inverse correlations also existed between the BCS score and all FMS scores. Independent t-tests were done to compare the means of all scores between subjects who were regular strength trainers (n=18) and those who were not (n=19). While no significant (p>.05) differences occurred between the groups for age, height, and weight, the strength trainers had significantly (p<.01) better PSPP, BCS, and FMS scores. While no cause-and-effect relationship can be assumed, the results may imply that improved PSP may give the confidence to perform better on FMS tests or that improving FMS may enhance PSP. Furthermore, combining both aerobic exercise and strength training may improve PSP and FMS.

Steele, K. Identification of body build stereotypes in preadolescents: relationship to eating disorders*, 1995. M.S., Purdue University (David R. Black). (66pp $4.00) PSY 1902

The purpose of this study was to examine among preadolescents the identification with body build stereotypes and the relationship of these stereotypes to characteristics of an eating disorder. Sixth through eighth grade children (n=133, response rate=68%) rated ecto- (thin), meso- (medium), and endo- (overweight) body size using 12 bipolar adjectives and completed the Eating Disorder Inventory-2. When subjects viewed the body types, there was a distinct difference in the personality characteristics assigned to each. Inspection of mean scores indicated that subjects perceived the ectomorphic body size more positively, followed by the mesomorphic and last by the endomorph body size. Subjects did not rate the body builds differently according to grade, age,
or BMI, however, females rated the ecto- and mesomorph body types more favorably than the males, F (1, 132)=23.60, p=.0001. A relationship was established between the category in which subjects assigned to themselves and their rating of the body type in that same category. The ecto- and mesomorph subject groups rated the same group silhouette similar to the way they rated themselves. A relationship also was established between subjects self-rating and raters’ body size categorization, r (131)=.40, p<.001. Subscale scores from the EDI-2 identified 22 (16.5%) “at risk” subjects for an eating disorder, however, a link was not established between “at risk” subjects and a negative body image. It was concluded that this age group is an important target for the prevention of eating disorders because preadolescents are in the beginning phases of developing eating disordered behaviors.

SOCIAL PSYCHOLOGY

Fenton, Jennifer M. Linking girls’ experiences in physical activity to school culture and social and political contexts: elements of an exemplary model, 1996. M.A., University of British Columbia (Wendy Frisby). (173pp 2f $8.00) PSY 1884

Previous studies have indicated that by the age of 6, girls already feel inferior in terms of proficiency in physical activity, and by the age of 10 cease their involvement in physical activity (Dahlgren, 1988). Furthermore, girls living in a low income multiracial community often face some of the greatest barriers to improving the quality of their lives through physical activity (Birrell, 1990; hooks, 1990; Lovell, 1991; Figueroa, 1993). The main purpose of this study was to examine the physical activity experiences of grade four girls living in a low income multiracial community, by taking into account how the school culture and the broader social and political contexts shaped (and are shaped by) these experiences. Research questions were posed in four areas: i) how did the girls experience physical activity? ii) how did the social context (e.g. low income, multiracial community and relationships with community organizations, police, and parents) influence these experiences? iii) how did the school culture shape these experiences? and iv) how did the political context (e.g., Ministry of Education policy, budget reductions) influence program provision? . . . The case study site was a Lower Mainland public elementary school situated in a low income, multiracial community that was committed to physical education as a means of improving the quality of student life. . . . The data was analyzed using inductive analysis and the qualitative software program, Q.S.R. NUD.IST. . . . Although the results indicated discrepancies between the girls’ experiences and the school’s intentions, the school’s commitment to a planned physical education program that was student-centred and context driven reflected elements of an exemplary model. The model was dynamic and with some changes has the potential to have long lasting emancipatory effects on the girls and their subsequent experiences in physical activity and sport. By listening to the girls’ voices and situating their experiences within the school culture and the broader social and political contexts, this study contributes on a theoretical, methodological, and practical level. Moorefield, David L. A comparative study of experiential learning utilizing indoor-centered training and outdoor-centered training, 1994. Ph.D., Texas Woman’s University (Susan Ward). (93pp 1f $4.00) PSY 1895

This quasi-experimental study was conducted using work teams from a north Texas corporation in an attempt to determine differences in behavioral measures that relate to team building among participants in a 4-hour outdoor experiential session and a 4-hour indoor experiential training session. The behavioral measures included group awareness, group effectiveness, locus of control, interpersonal communication, and self-esteem. The instrument was designed by researchers at the University of Wisconsin-Whitewater and was adapted for use in this study. Demographic data were obtained to note the similarities and differences of the teams, and hypotheses testing was accomplished using one way analysis of covariance. The sample (n=41) consisted of 21 males and 20 females, most of whom were business professionals with formal training in computer technology and education. Hypotheses were tested at the 0.01 significance level. The results indicated that there were no significant differences between an outdoor-training session and two indoor-training sessions on any of the five variables: group awareness, group effectiveness, locus of control, interpersonal communication, and self-esteem.

Zins, Wendy S. Relationships between social support and general well-being in an introductory health, fitness, and recreation course, 1995. M.P.H., University of Wisconsin-La Crosse (Richard A. Detert). (71pp 1f $4.00) PSY 1903

First semester freshman Ss (N=450) at the University of Wisconsin-La Crosse completed the Coping Resources Inventory (CRI) and the General Well-Being Schedule (GWB). Results showed general well-being and social support were significantly related (p=.0001) and moderately correlated (r=.34), suggesting students utilizing social support during a stressful period positively impacted their general well-being. Further, the GWB subscales “Satisfying, Interesting Life” (p=.0001) and “Emotional Behavioral Control” (p=.0001) were significantly related to social support as shown in the following equation: social support=31.473+.(171) Satisfying, Interesting Life+(.057) Emotional Control. This implies that increases in these subscale scores will result in an increase in social support.
and general well-being. The relationship between general well-being and total coping resources was also significant (p=.0001) and moderately correlated (r=.46). This suggests that those students utilizing coping resources positively impacted their general well-being. The GWB subscales "Satisfying, Interesting Life" (p=.0001), "Emotional Behavioral Control" (p=.0001), "Energy Level" (p=.0001), and "Cheerful vs. Depressed Mood" (p=.0308) were significantly related to total coping resources as indicated in the following equation: total CRI=23.78+(.233) Satisfying, Interesting Life+(.078) Emotional Control+(.025) Energy Level+(.007) Cheerful Mood. This means as individual subscale scores increase, an increase in total coping resources and general well-being results.

**STRESS**

Davies, Courtney C. *A study of the relationship between self-reported stress-related physical symptomology and spiritual wellness*, 1994. M.S., Brigham Young University (Brent Q. Hafen). (59pp 1f $4.00) PSY 1883

This study examined the correlation between spiritual well being and physical symptomology. The subjects were 236 students enrolled in the Health and Lifestyle Management courses at Brigham Young University in Provo, Utah. The Spiritual Well-Being Scale (SWBS), a 20-item scale, was used to measure existential and religious well-being. A list of common medical symptoms was used to measure physical symptomology. A correlative analysis was done on the scores from these two instruments. The results revealed no significant correlation between spiritual well-being and physical symptomology in this population.

Flor, Karen K. *The relationship between personality hardiness, stress and burnout in selected collegiate athletes*, 1996. M.S., Ball State University (Valerie Wayda). (64pp 1f $4.00) PSY 1886

The relationship between hardiness, stress and burnout has been established in occupational settings (Kelley, 1994; Talarico, 1989; Topf, 1989). This relationship has not been established with athletic populations, however. The purpose of this study was to determine if a relationship existed between personality hardiness, perceived stress and burnout in a selected sample of collegiate athletes. Participants were 181 male (n=129) and female (n=52) Division I athletes from three Midwestern universities representing four sports (baseball, softball, tennis and track). Each subject was asked to complete a survey—consisting of the Third Generation Hardiness Test, the Perceived Stress Scale, and the Maslach Burnout Inventory—during the regular season and at least 24 hours prior to an athletic contest. It was hypothesized that hardier athletes would report lower levels of perceived stress and burnout, and that higher levels of stress would be related to higher levels of burnout. Pearson product-moment correlations supported the hypothesized relationships.


The term burnout is a buzzword in the athletic community that has drawn considerable attention from coaches and sport psychology practitioners. Despite the concerns expressed about this phenomenon, the empirical data base on athlete burnout is sparse. This study examined athlete burnout from a commitment perspective, which suggests that athletes can be committed to sport because they want to be involved (i.e., sport attraction) or because they feel they have to be involved (i.e., sport entrapment). Theoretically, athletes who participate in sport for entrapment-related reasons are likely to experience burnout. The purpose of this study was to assess whether athlete profiles could be characterized based on theoretical determinants of commitment and, if so, whether the athlete profiles differed on burnout and attraction-based commitment. Female and male age group swimmers (N=236) completed a questionnaire that assessed theoretical determinants of commitment (i.e., enjoyment, benefits, costs, alternative attractiveness, investments, sport identity, social constraints, perceived control), burnout (i.e., emotional/physical exhaustion, reduced swim accomplishment, swim devaluation), and attraction-based commitment. Initially, cluster analysis was used to partition swimmers into subgroups based on theoretical determinants of commitment. Subsequently, multivariate and univariate analyses of variance examined whether emergent clusters differed on burnout dimensions and attraction-based commitment. Cluster analysis revealed four subgroups that were labeled malcontented, enthusiastic, obligated, and indifferent swimmers. Malcontented swimmers exhibited characteristics of sport entrapment in terms of low perceived control and high social constraints and generally had a negative outlook on swimming. These swimmers demonstrated the highest burnout and lowest attraction-based commitment scores. Conversely, swimmers in the enthusiastic cluster perceived swimming the most favorably and experienced the lowest burnout and highest attraction-based commitment. Although not as negative as the malcontented group, obligated swimmers also exhibited entrapment characteristics but only moderately high burnout scores and average attraction-based commitment. Finally, indifferent swimmers did not appear to be entrapped or attracted to swimming, and reported average levels of burnout and attraction-based commitment. Results of the present study provided support for a commitment perspective as a viable framework for understanding athlete burnout.
PART II
KEYWORDS INDEX
for
VOLUME 9, NO. 2

This index includes keywords for titles published in microfiche format by Microform Publications in Volume 9, No. 2 (October 1996).

Each title in Part I is indexed using keywords selected and assigned from the Sport Thesaurus, published by the Sport Information Resource Centre (SIRC), located in Gloucester, Canada. (Users should note that British spelling conventions [e.g., behaviour] occasionally appear.) In addition to keywords identifying the content of a study, the major research methods are identified by the statistical technique employed and appear in brackets immediately following the keywords list for each title. Users may find these methodological and statistical descriptors helpful in identifying a particular design or statistical prototype for their own research investigations. A listing of statistical abbreviations used in this index is found on the following page.

The first keyword for each title was used to generate the primary topical categories for the index; they appear in bold typeface. Titles having the same first keywords (primary topical category) are grouped under that category. The remaining keywords for each separate title are indented and listed, from general to specific, followed by the research and statistical methods used in the study contained in brackets (note that letters before the dash refer to the research methods, those after the dash denote the statistical methods), the author’s last name and initials, and the identification number for the title. The following example illustrates the elements of each entry.

BIOMECHANICS
ANKLE JOINT, RANGE OF MOTION, BRACE, STEP TRAINING, INJURY, SPRAIN, SEGMENTAL ANALYSIS TECHNIQUE, VARIANCE; [D,MA-DE,MR]. Money, S.M., PE 3439

Biomechanics is the primary topic of this study; keywords ankle joint through variance further delimit it. The research methods include descriptive and mechanical analysis techniques; statistics are descriptive and multiple regression. The author is S.M. Money and the study’s identification number is PE 3439. To find the title of the study as listed in part I of the Supplement, use the author index at the end of the publication to find the page number on which the study by S.M. Money is listed.

Criteria used to determine whether a study is experimental include the use of a control group and the manipulation of an independent variable or variables. Studies designed to examine correlations among selected variables in a particular population are classified as surveys.

Specific abbreviations for research methods and the statistical techniques that were used are listed alphabetically in the table on the following page.
## METHODS

<table>
<thead>
<tr>
<th>A</th>
<th>Anthropometry</th>
<th>E</th>
<th>Experimental</th>
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<td>Action Research</td>
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<td>CA</td>
<td>Content Analysis</td>
<td>I</td>
<td>Interview</td>
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<td>CH</td>
<td>Choreography</td>
<td>IA</td>
<td>Item Analysis</td>
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<td>CI</td>
<td>Critical Incident Analysis</td>
<td>J</td>
<td>Jury</td>
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<tr>
<td>COM</td>
<td>Comparative Study</td>
<td>JA</td>
<td>Job Analysis</td>
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<td>D</td>
<td>Descriptive</td>
<td>L</td>
<td>Laboratory</td>
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<tr>
<td>DA</td>
<td>Documentary Analysis</td>
<td>LR</td>
<td>Library Research</td>
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## STATISTICS

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<th>AC</th>
<th>Analysis of Covariance</th>
<th>MAC</th>
<th>Multivariate Analysis of Covariance</th>
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<td>MAV</td>
<td>Multivariate Analysis of Variance</td>
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<tr>
<td>AV(F)</td>
<td>Analysis of Variance (Friedman)</td>
<td>MDA</td>
<td>Multivariate Discriminant Analysis</td>
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<td>Binomial</td>
<td>%</td>
<td>Percent</td>
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<td>BC</td>
<td>Biserial Correlation</td>
<td>PR</td>
<td>Phi Coefficient</td>
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<tr>
<td>BON</td>
<td>Bonferroni Method</td>
<td>R</td>
<td>Multiple Correlation</td>
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<td>Canonical Correlation</td>
<td>RC</td>
<td>Reliability Coefficient</td>
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<td>Contingency Coefficient</td>
<td>RD</td>
<td>Spearman Rank Correlation</td>
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<td>Cohen’s Coefficient of Agreement</td>
<td>RE</td>
<td>Regression Equation</td>
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<td>Cochran Q Test</td>
<td>RM</td>
<td>Repeated Measures</td>
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<td>Chi Square</td>
<td>RPM</td>
<td>Pearson Product-Moment</td>
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<td>Coefficient of Variation</td>
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<td>Spearman-Brown Prophecy</td>
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<td>Descriptive</td>
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<td>Delphi Method</td>
<td>SEE</td>
<td>Standard Error of the Estimate</td>
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<td>Duncan Multiple Regression</td>
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<td>Sign Test</td>
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<td>Dunn Test</td>
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<td>Split Plot Repeated Measures</td>
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<td>Signed Ranks</td>
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<td>Flanagan Procedure</td>
<td>SSP</td>
<td>Split-Split Plot Repeated Measures</td>
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<td>Factor Analysis</td>
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<td>Tetrachoric Correlation</td>
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<td>Graphic</td>
<td>TU</td>
<td>Tukey’s Test</td>
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<td>GA</td>
<td>Gamma Method of Association</td>
<td>U</td>
<td>Mann-Whitney U Test</td>
</tr>
<tr>
<td>GG</td>
<td>Greenhouse Geisser Conservative Test</td>
<td>V</td>
<td>Votaw Formula</td>
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KEYWORDS

ACADEMIC ACHIEVEMENT
TIME MANAGEMENT, ATHLETE, NON-ATHLETE, UNIVERSITY, NATIONAL COLLEGIATE ATHLETIC ASSOCIATION, SEX FACTOR, VARIANCE; [D,Q-DE,AV,TU]. Kartschoke, C., PSY 1891

ACHILLES TENDON
INJURY, EXERCISE, THERAPY, ELASTICITY, RAT, VARIANCE; [E,L-DE,AV,MAV,NK]. Harrison, M.E.G., PE 3651

AEROBIC TRAINING
TEACHER, CERTIFICATION, SURVEY, COMPARATIVE STUDY; [D,S-DE,%]. Jefferis, S.J., PE 3655

ANAEROBIC THRESHOLD
LACTATE, RESPIRATION, ARM ERGOMETRY, HANDICAPPED, SPINAL CORD, INJURY, COMPARATIVE STUDY; [D,L,O-DE]. Blake, N.E., PH 1487

ANKLE
INJURY, REHABILITATION, HYPERBARIC OXYGENATION, COMPARATIVE STUDY; [E,L-DE,AV,RM,T]. Borromeo, C.N., PE 3631

ANKLE JOINT
RANGE OF MOTION, BRACE, SPRINTING, SHUTTLE RUN TEST, VERTICAL JUMP, COMPARATIVE STUDY; [E-DE,AV,RC,RM,T]. Locke, A.B., PE 3662

RANGE OF MOTION, INJURY, SPRAIN, PREVENTION, TAPING, VARIANCE; [D,MA-DE,AV,RM,TU]. Pederson, T.S., PE 3665

RANGE OF MOTION, SPRAIN, LATENCY, BRACE, DEROTATION BRACE, VARIANCE; [D,I-DE,AV,T,TU]. Van den Eikhof, V.E., PE 3676

ANOXEMIA
PULMONARY DIFFUSING CAPACITY, POST-EXERCISE, BICYCLE ERGOMETRY, ELITE ATHLETE, VARIANCE; [D,L-DE,AV,RE,RM,T]. Lama, I.L., PH 1499

APPLIED BEHAVIOUR ANALYSIS
CONSUMER, SPORT, CLOTHING, SHOES, EQUIPMENT, PEOPLE'S REPUBLIC OF CHINA, MARKETING, QUESTIONNAIRE, COMPARATIVE STUDY; [D,1Q-DE,CS]. Geng, L., PSY 1887

ATHLETE
UNIVERSITY, DISENGAGEMENT, RETIREMENT, SELF-PERCEPTION, ROLE CONFLICT, ACHIEVEMENT, SATISFACTION, QUESTIONNAIRE, MULTIVARIATE ANALYSIS, INSTRUMENTATION, TEST RELIABILITY; [D,LLA,TC-DE,AV,HSD,MAV,RC]. Lantz, C.D., PSY 1893

UNIVERSITY, MAN, WOMAN, PERSONALITY, STRESS, STRESS MANAGEMENT, BURNOUT, CORELATION; [D,Q-DE,RP]. Flor, K.K., PSY 1886

ATHLETIC DIRECTOR
CAREER DEVELOPMENT, PROFESSIONAL PREPARATION, NATIONAL COLLEGIATE ATHLETIC ASSOCIATION, SEX FACTOR, COMPARATIVE STUDY; [D,S-DE,%,G]. Sweany, L., PE 3674

ATHLETIC TRAINING
ADMINISTRATION, FUND RAISING, BUSINESS, SPONSORSHIP, NATIONAL COLLEGIATE ATHLETIC ASSOCIATION, SURVEY, COMPARATIVE STUDY; [D,S-DE,%,G]. Sanderson, N., PE 3669

BALLET
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BASKETBALL
VERTICAL JUMP, PLYOMETRIC TRAINING, ROPE SKIPPING, COMPARATIVE STUDY; [D,MA-DE,AV]. Timmons, S.A., PE 3675

BIOMECHANICS
GAIT, WALKING, RUNNING, GROUND REACTION FORCE, MUSCULOSKELETAL SYSTEM, TREADMILL, COMPARATIVE STUDY; [D,MA-DE,T]. Fewster, J.B., PE 3637

KINEMATICS, EQUILIBRIUM, POSTURE, WALKING, BRACES, CEREBRAL PALSY, NON-HANDICAPPED, CHILD, COMPARATIVE STUDY; [D,L,MA-DE,G]. Burtner, F.A., PE 3633

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BODY COMPOSITION
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BODY IMAGE
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QUESTIONAIRE, VARIANCE; [D,A,Q-DE,AV,RE]. Steele,
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BODY TEMPERATURE REGULATION
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OXYGEN CONSUMPTION, SEX FACTOR, VARIANCE;
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BONE DENSITY
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DE,AV,SCH,T,Z]. Eddins, W.C., PH 1491
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NON-ATHLETE, GYMNASTICS, RUNNING, LONGITU-
DINAL STUDY; [D,L-DE,AV,LM,SCH,TU]. Robinson, T.L.,
PH 1505

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RESPIRATION, HEMODYNAMICS, ARM ERGOMETRY,
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COPING BEHAVIOUR
QUALITY OF LIFE, LIFE SATISFACTION, HEALTH, SOCIAL
REINFORCEMENT, SOCIAL ENVIRONMENT, STU-
DENT, UNIVERSITY, CORRELATION; [D,Q-
DE,RE,RPM]. Zins, W.S., PSY 1903

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SCHOOL, VARIANCE; [E,J-DE,AV,MAV,RM]. Funk,
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DANCE
BALLROOM DANCE, RENAISSANCE, HISTORY, TEACH-
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STRATION PROGRAM, PROSPECTIVE STUDY;
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DEPRESSION
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MINORITY GROUP, ETHNIC GROUP, UNITED STATES, INTERVIEW, ATTITUDE INVENTORY; [D,I-DE]. Bond, C., HE 563

DOPING
APPLIED BEHAVIOUR ANALYSIS, BODY IMAGE, SELF-ESTEEM, SURVEY, CANADIAN INTERUNIVERSITY ATHLETIC UNION, FACTOR ANALYSIS; [D,S-DE,FA,RE]. Allemeyer, M.F., PSY 1878

DRUG ABUSE
DRUG EDUCATION, ALCOHOL, ALCOHOL EDUCATION, SECONDARY SCHOOL, QUESTIONNAIRE, ATTITUDE INVENTORY; [D,Q-DE]. Byrd, M.J., HE 564

ENERGY EXPENDITURE
OXYGEN CONSUMPTION, LACTATE, POST-EXERCISE, RUNNING, CYCLING, ENDURANCE, TRAINING, VARIANCE; [D,L-DE,AV,RM,T,TU]. Springer, J.B., PH 1510

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AEROBIC METABOLISM, ANAEROBIC METABOLISM, AEROBIC CAPACITY, WINGATE ANAEROBIC TEST, BICYCLE ERGOMETRY, CHILD, COMPARATIVE STUDY; [D,A,L-DE]. Prasad, N., PH 1504

ENERGY EXPENDITURE, OXYGEN CONSUMPTION, RESPIRATORY EXCHANGE RATIO, HEART RATE, STEP TRAINING, NO-BOUNCE AEROBICS, PERFORMANCE PREDICTION, VARIANCE; [D,L-DE,AV,DU,RM]. Barry, D.M., PH 1504

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ETHNOGRAPHY
EXERCISE, PARTICIPATION, GIRL, ELEMENTARY SCHOOL, CASE STUDY; [D,C,DA,L-DE]. Fenton, J.M., PSY 1884

EXPERIENCE
LEARNING, ADVENTURE EDUCATION, EMPLOYEE, GROUP DYNAMICS, GROUP STRUCTURE, INTERNAL-EXTERNAL CONTROL, SELF-ESTEEM, INDOOR, OUTDOOR EDUCATION, COMPARATIVE STUDY; [D,DE,AC]. Moorefield, D.L., PSY 1895

FEAR
FALLING, ANXIETY, SELF-EFFICACY, INTERNAL-EXTERNAL CONTROL, AGED, PHYSICAL MOBILITY, QUESTIONNAIRE, CORRELATION; [D,Q-DE,CS,RD,RE,MR,U]. Ferrari, A., PSY 1885

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### Books

- *Reflections*. H. Harrison Clarke, 1992, 3 fiche $12

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